The Am

Mayor Paul G. Goebel, flanked (l. and r.) by City Manager George E. Bean and Fire Chief Frank H. Burns, of Grand Rapids, Mich.—the host city, from August 14 to 17, of the International Association of Fire Chiefs.

Low-cost surfaces for City Streets

Compacting a low-cost Texaco Asphalt surface, composed of plant-mixed Cutback Asphalt and inexpensive local aggregate.

Perhaps the weight and volume of traffic served by streets which are to be improved does not warrant the construction of heavy-duty asphalt paving. In that case, Texaco Cutback Asphalts offer municipal officials several types of street surfacing, which combine low cost with excellent performance under the kind of traffic served by a city's secondary streets.

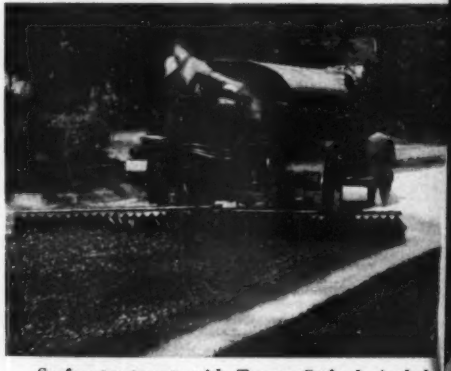
1. An inexpensive aggregate available locally can be mixed in a plant with one of the Texaco Cutback Asphalts. The mix is trucked to the street and spread by power grader or mechanical paver to the desired thickness, then compacted. An old, well-consolidated gravel or macadam street provides a good base for such a surface.

2. The same inexpensive local aggregate and Texaco Cutback Asphalt can be mixed thoroughly on the street surface by power grader, then spread to the desired depth and compacted.

3. Or, the street can be given a series of surface-treatments with Texaco Cutback Asphalt at intervals of one to three years, thus building up a tough, waterproof mat.

Mixing Texaco Cutback Asphalt with local aggregate on the road to obtain a low-cost, all-weather surface.

When planning the improvement of your own secondary streets, it will pay you to consider these economical, serviceable types of Texaco Asphalt construction. Helpful booklets supplying details can be obtained from our nearest office.



Surface-treatments with Texaco Cutback Asphalt over a period of years build up a tough, waterproof mat on a street.

THE TEXAS COMPANY, Asphalt Sales Dept., 135 E. 42nd Street, New York City 17

Boston 16 Chicago 4 Denver 1 Houston 1 Jacksonville 2 Philadelphia 2 Richmond 19

TEXACO

REG. T.M.

TEXACO ASPHALT

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THE MUNICIPAL INDEX and ATLAS, used in connection with the current advertisements in THE AMERICAN CITY, places officials in the most favorable position to obtain all types of available equipment and supplies from manufacturers who desire to serve municipal government departments. This 827-page annual is published by The American City Magazine Corporation, 470 Fourth Ave., New York 16, N. Y.

Index to Advertisers, p. 220 • Coming Conventions, p. 161 • Copies of this issue printed, 22,500

Thinking
Inventing
Building TO MEET THE COUNTRY'S TELEPHONE NEEDS

The responsibility of the Bell System does not consist of merely supplying good telephone service today. We have to be always creating so that the service grows better and better.

THE CALL FOR PROGRESS

This process of creation can never stop, for the country's telephone needs are continually changing and increasing. So we must always be thinking ahead and inventing ahead and building for the future. This is what the country looks to us to do and we are doing it. It is especially important in these days of national defense.

The pre-eminence of telephone research and manufacturing reflects a dynamic policy and point of view throughout the business. The people needed to come up with new ideas and put them into action are constantly being encouraged and given opportunity.

We shall continue to meet the challenge of the future and do our full part, always, to advance the welfare, the strength and the security of the United States of America.

BELL TELEPHONE SYSTEM

Our Municipal Notebook

Present Status of Federal-Municipal Grants and Controls

PENDING programs affecting federal grants-in-aid and other federal contributions to municipalities are brought up to date as of July 12, 1951, in a four-page mimeographed memorandum written by Carl H. Chatters, Executive Director of the American Municipal Association, with the assistance of Fred Schuckman and Robert Blundred of AMA's Washington office. The memorandum contains paragraphs on

Rent Control
Intergovernmental Relations
Civil Defense
Airport Construction
Wage Controls
Payments-in-lieu
Social Security
Price Controls
Housing, Slum Clearance, Urban Redevelopment
Hospital Construction
Water-Pollution Control
Advance-Planning Grants
School Grants—Construction and Operation
School-Lunch Program
Loans from Reconstruction Finance Corporation
Public-Health Grants
Revenue Act of 1951
Federal Aid Highway Act

A copy of this memorandum may be had without charge on application to the Chicago office of the American Municipal Association, 1313 East 60th Street, Chicago 37, Ill., or the Washington office, 522 Transportation Bldg., Washington 6, D. C.

Cities Adopt Service Charges

BIG cities are increasingly using special service charges to finance operation of basic services to their residents.

Citing statistics gathered for the 1951 Municipal Year Book, the International City Managers' Association points out that seven cities of over 500,000 population now have sewer-service charges in effect, based on the extent of use of the sewer system. Smaller cities have long relied on service charges to finance sewerage-system operations.

New York joined the parade of big cities adopting sewer-service charges last year, when the city council imposed a one-third increase in water bills as a sewer-use fee. Funds collected from this course are earmarked to be used for maintenance, management, operation, and repair of the present sewer system. Other big cities levying sewer charges include Cincinnati, Minneapolis, Buffalo, Cleveland, Detroit, and Philadelphia.

At least 278 cities with populations of over 10,000 now make charges for sewer service, according to the Year Book statistics, and 126 municipalities charge for refuse collection. Chief basis of charges by cities levying their sewer-service fees are: against amount of water consumed, fixed percent of the water bill, number of plumbing fixtures, number of sewer connections, or on a uniform rate.

A newly adopted law in West Virginia may result in a rash of new service charges by cities of that state, the Association observed. Under the law, cities of that state may levy fees for such municipal services as garbage collection and sewer connections.

47 Pennsylvania Cities May Tax Buildings at Lower Rate Than Land

UNDER an act of the Pennsylvania Legislature signed by Governor John S. Fine on June 28, 1951, applicable to the 47 cities of the third class, the council of any such city "may by ordinance in any year levy separate and different rates of taxation for city purposes on all real estate classified as land exclusive of the buildings thereon and on all real estate classified as buildings on land."

The new law (Act No. 164) further provides that "When real estate tax rates are so levied they shall be uniform as to all real estate within each such classification and such rates shall be determined by the requirements of the city budget as approved by council."

As many readers of THE AMERICAN CITY are aware, Pennsylvania cities of the second class (Pittsburgh and Scranton) have had and used since 1914, the right to tax buildings for city purposes at one-half the land-value rate. In extending a similar privilege to the third-class cities, the Legislature has wisely granted to the city councils the right to determine by ordinance the percentage of differentiation between the tax rate on improvements and on land values. It is significant that the new act was approved by leaders of both political parties and was adopted by a vote of 50 to 0 in the Senate and 141 to 47 in the Assembly.

The case for a graded tax plan was set forth in an article entitled "Saner Taxes for Real Estate," published in the July-August 1950 issue of the magazine of the League of Cities of the Third Class in Pennsylvania. THE AMERICAN CITY has a supply of reprints, and will be glad to send a copy, without charge, to any reader on application.

Critical Materials For Municipal Construction

Where to get forms and instructions to be used in securing permission for construction projects. **See page 112 of this issue.**

The Need for Industrial Dispersal

POINTING OUT that "the economy of the United States is facing, for the first time in modern history, the possibility of having to maintain industrial production under conditions of direct military action," the Joint Committee on the Economic Report has issued a pamphlet on "The Need for Industrial Dispersal."

"Since there is no known defense against the atomic bomb itself except space," says this report, "dispersion is one of the first considerations for strategic safety of industrial facilities. As labor supply and plant facilities become exhausted in more and more metropolitan areas, it is equally apparent that business, in expanding to meet defense-production needs, must look to

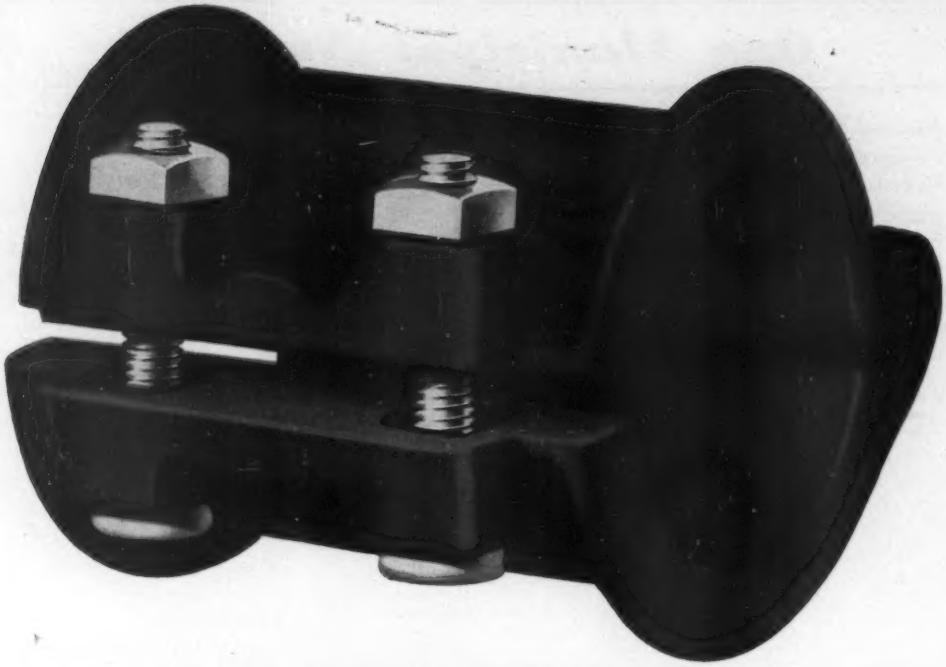
The American City Quiz

Match Wits With the Experts

QUESTIONS

1. ***How many meters should a man be able to read in a day?***
2. ***How extensive is the use of powdered rubber in asphalt surfacing?***
3. ***What size hose is most used in extinguishing fires?***
4. ***What is the price relationship between natural gas and diesel fuel, and what effect has it had on internal combustion engines?***
5. ***What admixture is designed to make concrete waterproof?***
6. ***How much water should be allotted for use in grade schools, high schools, and hospitals?***
7. ***Does a property owner have the right to expect zoning restrictions to remain a part of his deed?***
8. ***What city operates the largest off-street metered parking lot?***
9. ***What are the relative efficiencies of packer-type refuse trucks as against open trucks?***

(Answers on page 9)



EMERGENCY PIPE CLAMP

SKINNER-SEAL

PIPE LINE CLAMP

During the present critical shortage of pipe, nothing compares with these clamps for repairing corrosion leaks and splits in services as well as mains—for all sizes of steel and cast iron pipe, ½" to 12". Standard of the industry for half a century.

M. B. SKINNER COMPANY
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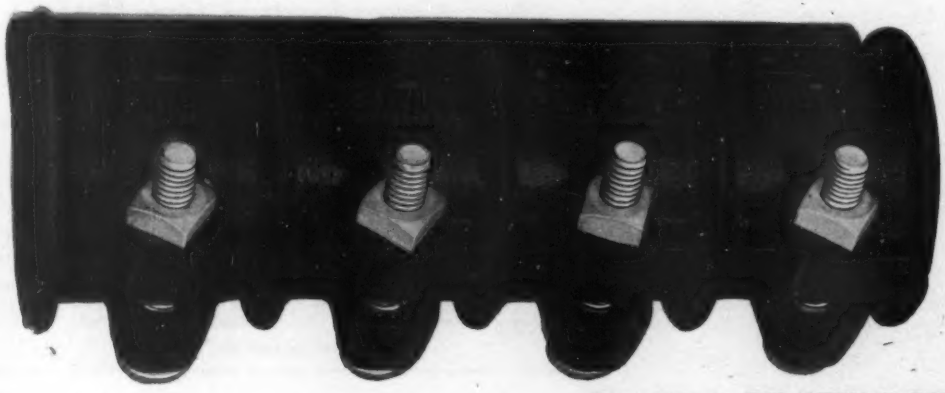


areas which are not now developed industrially."

This report attempts to summarize the nature and extent of the programs for directly stimulating industrial expansion and to relate them to the problems of industrial location for maximum military security and utilization of the Nation's economic resources.

Senator Joseph C. O'Mahoney, of Wyoming, is Chairman of the Joint Committee on the Economic Report, and Grover W. Ensley is Staff Director.

An Act of Dedication For Municipal Officials

IN REPORTING last month on the 1951 Conference of the Canadian Federation of Mayors and Municipalities, THE AMERICAN CITY made mention of the "Act of Dedication" with which the Conference closed.

The fine literary and ethical flavor of this ceremony makes it worthy of emulation, we believe, by state and national organizations of municipal officials in the United States.

A prelude of organ music is followed by a prayer and by brief statements by the President of the Conference and other spokesmen, interspersed with responses in unison by the members.

The excerpts reproduced below indicate the tone of this "Act of Dedication" and the style of the pamphlet in which the text has been published.

George S. Mooney, Executive Director of the Canadian Federation of Mayors and Municipalities, Mount Royal Hotel, Montreal 2, Canada, will be glad to send a copy of the pamphlet, without charge, to any municipal official or civic organization executive on request.

All in unison will then say:

- It is our solemn resolve to lend our common efforts to the following propositions
  - —We shall seek to afford to all citizens ready access to useful and creative work in safe surroundings
  - —We shall strive to the end that all citizens shall be protected against the perils of old age, want, dependency, and unemployment
  - —We shall endeavour to assure to all citizens dwellings fit for their children to live in, with light, air and privacy, and the minimum comforts and necessities of good family life
  - —We shall seek to protect the citizens' health against accident and disease, against dirt, smoke, noise waste, and the pollution of food and drink
  - —We shall endeavour to provide the citizens with opportunities for rest and recreation, for free assembly with their fellows in civic discussion, in affirmation of loyalty and in just protest against abuses, governmental or otherwise
  - —We shall foster community allegiance and the free intermingling of ethnic and cultural groups in a positive democratic program of co-operation
  - —We shall endeavour to provide modern, safe and efficient means of transportation and traffic-ways to and between and within our cities and towns and thus to open the resources of our urban communities to those who live in country places and to bring the country nearer and more freely accessible to our citizens.
  - —We shall aim to afford full opportunity to our citizens for education, for work, for citizenship and for personal growth and happiness.
  - —Our desire shall be to make our cities and towns true temples of the four freedoms: shrines of creative life, work, and play, for all our citizens in an environment affording them amenity in their daily living and in an atmosphere of true civic grandeur.

The President shall then say:

- Of such a city a man could say proudly, in the ancient phrase, "I am a citizen of no mean city." That it may come about, the democratic state must assure the community of city dwellers these rights:
  - —The right to local self-government, with officials of their own choosing.
  - —The right to make laws or ordinances through their own representatives, upon matters of local concern.
  - —The right to maintain free political organizations, uncontrolled by the State or a national party
  - —The right to develop as a single, unified community the urban area in which they work, live, and play, unfettered by artificial boundaries
  - —The right continuously to reshape the urban community by systematic development and re-development in accordance with forward looking and intelligent plans.
  - —The right to establish a rational urban land policy which, while affording private owners full and adequate opportunity to develop the land, will curb the forms of speculation that prove calamitous to the investing and tax-paying public.
  - —The right to adequate revenues for the support of the services that they ask of their local government.
  - —The right to have that government administered by men of skill, integrity, talent and training, selected for merit, responsible only to political institutions democratically controlled

A spokesman will then say

- This is no goal of Utopia. These things can be. They are already substantially in the making. To fully win them, we must quicken our efforts. We must show the world that democracy in a free society is the sound and only sure foundation upon which a good society can be achieved.

Rescue Work in Civil Defense—A Significant Statement

OUR experience in recent test programs repeatedly has demonstrated that radiation hazards will not delay rescue and recovery work after the air burst of an atom bomb. There is no reason why every casualty cannot be removed and treated immediately without serious radiation hazard to rescuers.

In the case of a high aerial burst of an atomic weapon, such as I think probably would be used, there would be no residual radiation. In a low air burst, just above the ground's surface, the significant residual radiation would be confined to an area 300 to 400 yards in radius. No rescue work would be required in this area because it would be devastated. Rescuers would not be subject to injurious ionizing radiation in reaching survivors.

At Eniwetok, for instance, large numbers of scientists and technicians returned to the test islands, as quickly as transportation by air and water permitted, to recover their instruments and data needed for their research. On one of the islands where new construction was required, full-time work started 1,000 yards from the detonation point on the day of the explosion, and within the 72 hours required to build barracks the workers occupied their quarters. There was residual radioactivity in an area immediately around the detonation point because the detonations were made from towers.

Radiation safety surveys made after the tests in the immediate area of Eniwetok atoll and neighboring inhabited atolls failed to reveal any contamination of a serious nature. Food and drinking water outside the destroyed area continued to be fit for consumption.

The immediate radiation hazard from the air burst disappears after the first two minutes. Rescue, fire fighting, and recovery work can begin immediately in any area where there is life, as in any major catastrophe caused by conventional air attacks, earthquakes, or disasters on the scale of those at Texas City and Halifax.

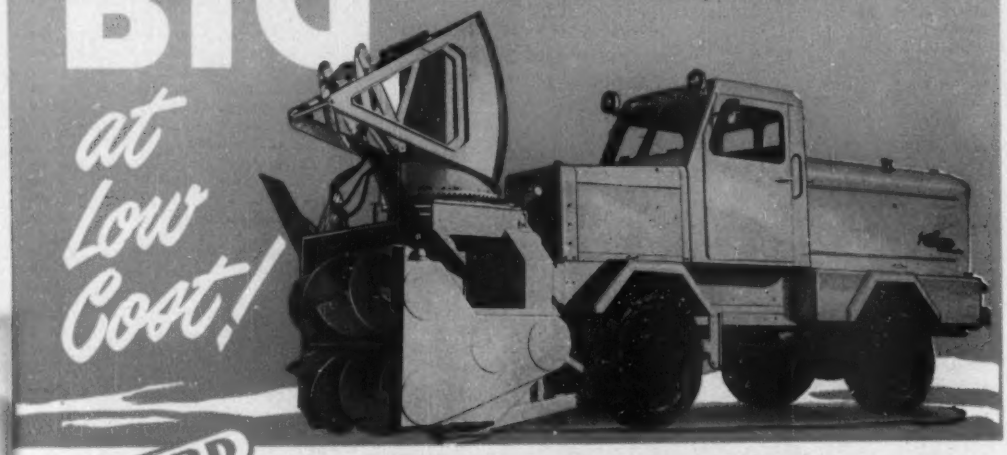
BRIGADIER GENERAL JAMES COONEY
Radiation Safety Adviser to Joint Task Force Three

Second Advance Planning Program Discontinued

THE Housing and Home Finance Agency will receive no more applications for interest-free planning funds under the second Advance Planning Program for non-Federal Public Works.

Administrator Raymond M. Foley said this decision was in line with the program

BIG PERFORMANCE at Low Cost!



SICARD

SNOW MASTER JUNIOR

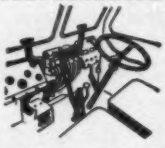
WITH NEW EXCLUSIVE FEATURE **FLUID DRIVE***

Efficient, economical snow clearance now is within the reach of even small budgets with the Snow Master *Junior*, a product of Sicard research and engineering. Husky, powerful and versatile, the *Junior* answers the demands of a host of new users who want a low-cost machine able to stand the gaff all winter long. It has proved itself the ideal machine for many cities, towns, smaller communities and large industrial plants. The *Junior* also is in demand as auxiliary equipment to the larger Snow Master in the biggest cities and on airports and airdromes.

The *Junior's* 100-inch wheelbase makes it highly manoeuverable, and its sturdy four-wheel-drive gives it positive traction in the heaviest snow and slush. This versatile machine has all the job-proven Sicard features: twin augers with unique equalizer bar, long-range reversible casting turbine to propel snow far from cleared areas, and the patented Sicard "Wrist-Action" Chute for pack-loading moving trucks or spot-casting snow to vacant lots, lawns or fields. The *Junior* is equally at home in narrow laneways, around buildings, on hangar aprons and in busy downtown traffic areas. It gives big-machine performance at small-machine cost.

* The Chrysler Ind. 8 gasoline engine used for motive power on the Snow Master Junior is now equipped with GYROL FLUID DRIVE. Slippage allows for slow down of vehicle in heavy snow without changing of gears; reduces wear and tear on clutch—simplifies operation.

DISTRIBUTORS FROM COAST TO COAST



DRIVER COMFORT. Finger-touch hydraulic controls located in heated cab for comfort and efficiency.

FOUR-WHEEL DRIVE. Sure-traction transmission gives power to spare. The *Junior* goes through where others stall.

FAST, SURE LOADING. Exclusive, patented "Wrist-Action" Chute swings on a 220° arc, provides unmatched versatility.

SICARD INDUSTRIES INC.

SICARD

PLANT and OFFICES
753 W. MAIN STREET
WATERTOWN, N. Y.

submitted by the President in the budget for the fiscal year 1952, and with Congressional action on the 1952 Independent Offices Appropriation Bill.

Applications received prior to the deadline date, he said, would be considered in the light of funds available, the relative urgency of the proposed public works, and their relation to the defense effort or essential community requirements. The planning program has been administered by the housing agency through its Community Facilities Service, headed by Commissioner Pere F. Seward. Authority to make such advances expires October 13 under the authorizing legislation.

The planning program was authorized by Congress in October 1949 to run for two years. Last September, in compliance with a request of the President, it was restricted to new criteria to bring public-works construction within the defense effort or to meet civilian requirements that were clearly essential, and all pending applications were restricted to conform to these conditions.

Advances under the program have been approved for planning assistance totaling approximately $23,790,180 for more than 1,200 public-works projects, principally sanitation works and schools, to cost an estimated $927,727,157.

New Jersey to Check on Tax Exemptions

MOST of the real property enjoying tax exemption in New Jersey soon will be checked by local assessors under terms of the newly adopted Saiber Act.

Under the new law, municipal tax assessors, prior to next October 1, will obtain an initial statement from property owners showing their right to the exemptions they claim. Each year, thereafter, the assessor will obtain from owners of newly exempt property the initial statement, and from owners of previously exempt real property a further statement reporting any change in use. Exemptions of personal property, as well as those provided under veterans' laws, are excluded from provisions of the act.

It is believed that some property continues on exempt lists even though the purpose for which tax exemption was originally granted may have changed. The new act should help clarify the status of such property. It may return considerable municipal valuations to tax productivity, thus bringing some measure of relief to all taxpayers.

Highway Research Board Asks for Ideas

A STUDY of the ways and means of reserving lands for highway purposes prior to acquisition in the customary manner is under way by the Highway Research Board's Committee on Land Acquisition and Control of the Highway Access and Adjacent Areas.

In a letter to the editor of AMERICAN CITY, dated June 29, 1951, Chairman David R. Levin of this committee expresses the hope that he may hear from cities or individuals having had experience which would be helpful to the committee. The techniques being studied include:

- Building lines established under the zoning mechanism
- Street widths established under subdivision control
- Establishment of building lines for street widening
- Protection of the bed of mapped streets
- Street and highway reservations acquired under eminent domain.

Mr. Levin, who may be addressed at the Bureau of Public Roads, Washington 25, D. C., will be glad to send a questionnaire covering these subjects to any reader of THE AMERICAN CITY on request.

"New Citizens" Honored in Hagerstown, Md.

HAGERSTOWN, Md. (1950 population, 32,491), has taken definite steps to honor the "new citizens" of Washington County, Md., reports the U. S. Chamber of Commerce *Newsletter* for June. In inaugurating a series of Citizenship Day programs, the Hagerstown Chamber of Commerce compiled the names and addresses of everyone in the county who had reached the age of 21 or who had become naturalized between June 1, 1950, and May 31, 1951.

These "new citizens" were notified by press, radio, and direct mailings of the eight meetings to be held in their honor throughout the county, and were asked to attend one of them. A "Certificate of Recognition of Citizenship Responsibility" and a copy of the Bill of Rights were presented by the Chamber to 184 people responding. Over 1,000 people in total attendance heard speakers emphasize the privilege and duty of voting, and the general responsibilities of citizenship.

25 New Council-Manager Cities in Six Months

ACCORDING to the July 1 issue of the *City Managers' News Letter*, 25 municipalities have come under the council-manager plan since January 1, 1951, making a grand total of 1,037 as of July 1. These municipalities are:

California
Arcadia
Modesto
San Bruno
Santa Clara
Colorado
Florence
Kansas
Augusta
Maine
Levant
Oxford
Michigan
Farmington
Fremont
St. Clair Shores
Minnesota
North St. Paul
North Carolina
Laurinburg
Oklahoma
Waurika
Pennsylvania
Marple Township (Broomall)
South Carolina
Greenville
South Dakota
Hot Springs
Madison
Tennessee
Atwood
Savannah
Texas
Perryton
Utah
Cedar City
Vermont
Poultney Town
Poultney Village
Wisconsin
Marinette

The American City Quiz

ANSWERS TO QUESTIONS ON PAGE 5

1. According to the International City Managers' Association, Milwaukee believes its meter readers should be able to read 165 meters per day; Detroit, 176 to 300; Los Angeles, 200 to 350; New Orleans, 175 to 200, and Cincinnati, 126 to 140.

2. It is still on a test basis. Last year, pavement containing rubber was laid in Richmond, Va.; New York City; San Antonio, Texas, and St. Rose, Quebec, according to Xylos Rubber Company, of Akron, Ohio.

3. Fred J. Wells, Chief, Fargo, N. D., Fire Department, reports that 94% of the fires his department puts out are extinguished with a hose less than 2½ inches in circumference. The next 4% are extinguished with a 2½-inch hose. The remaining 2% require every hose line that he has and can borrow.

4. H. W. Dow, District Manager of Nordberg Manufacturing Company, reports that seven times the price per gallon of fuel oil gives the equivalent price per 1,000 cubic feet of natural gas. He reports further that the trend today is toward the use of diesel engines able to burn either natural gas or oil, with preference for gas as the main source of power.

5. An admixture of emulsified asphalt, such as Hydropel, mixed at the rate of 1 to 1½ gallons per sack of cement, is reported to make concrete waterproof without impairing the concrete strength. The emulsion will be used in place of an equivalent amount of water.

6. A study at the University of Illinois shows that it is necessary to allot 5 to 10 gallons per person per day in grade schools, 15 to 20 gallons in high schools, and 125 to 225 gallons in hospitals.

7. The courts seem agreed that a property owner has no vested rights in zoning in existing residential areas. He must recognize the city's power to change zoning if it so desires.

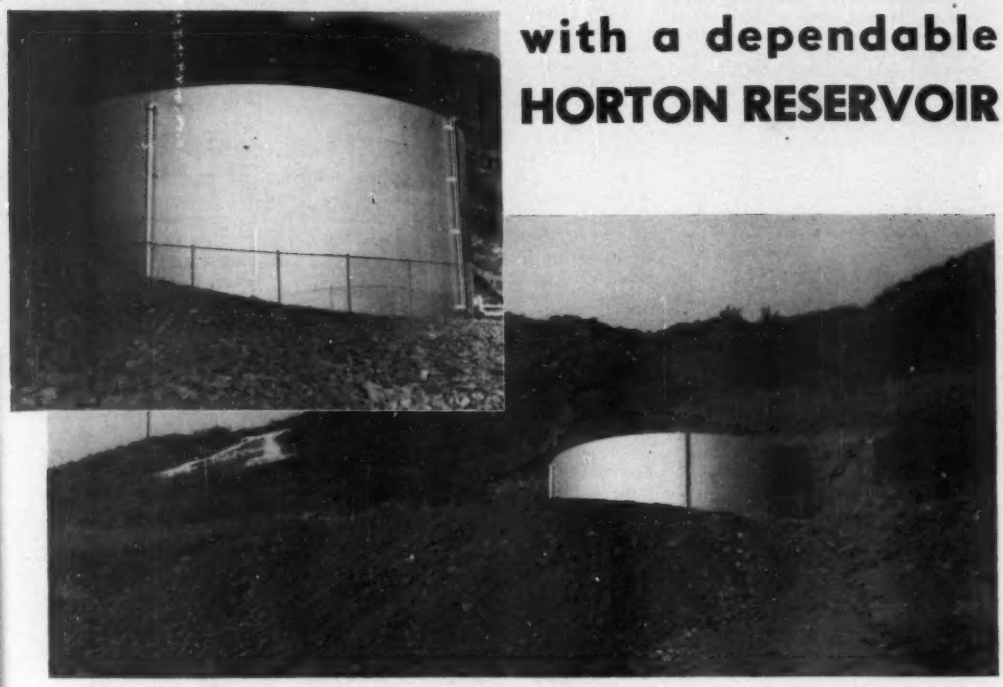
8. Quincy, Mass., has the largest metered parking lot. The lot can hold 5,000 cars and uses Dual parking meters. The largest metered lot in Texas holds only 278 cars.

9. Kansas City, Mo., conducted a test some time ago and discovered that the open trucks required six hours, carrying 3 to 4 cubic yards, to collect from a set of hospitals, airports, and the municipal auditorium. When the same trucks were equipped with Gar Wood Load Packer bodies, they did the work in two hours.

Send in your suggested questions with the answers on municipal topics for use in this feature. THE AMERICAN CITY will make a small payment for each question accepted.

UTILIZE NATURAL ELEVATION

with a dependable HORTON RESERVOIR



Horton welded steel reservoirs offer an economical method of improving municipal water pressure when a nearby natural elevation is available. They give results similar to those provided by large-capacity elevated tanks . . . more uniform water pressure in *all* parts of the distribution system at *all* times of the day. Pumping costs are reduced. Furthermore, a dependable water supply often improves the fire insurance rating resulting in lower insurance premiums throughout the municipality.

Tempe, Arizona, recently installed the 1,000,000-gallon Horton steel reservoir shown above on the slope of a butte just northeast of the center of town. It supplies well water to 7,645 people through 140,000 feet of distribution mains ranging from 2 to 12 in. in diameter. High and low pressure variations are eliminated. A constant pressure of 70 to 78 lbs. per sq. in. is maintained throughout the city.

Horton reservoirs are built in capacities up to 10,000,000 gallons. Their welded steel construction means lower maintenance costs and longer, more serviceable life.

Ask our nearest office to give you estimating figures on reservoirs and elevated tanks when contemplating improvements in your water system. There is no obligation on your part.

Specify the Phoscote Process

Give your Horton tanks a maximum life. Let us remove the mill scale from the steel and improve the bond between the metal and the paint by the Phoscote Process of pickling and painting. Write for a copy of Bulletin I, which describes this proven process in detail.

HORTON

WELDED STEEL

STORAGE TANKS

CHICAGO BRIDGE & IRON COMPANY

Plants in Birmingham, Chicago, Salt Lake City, and Greenville, Pa.

Atlanta 3 ..... 2114 Healey Bldg.	Los Angeles 17 ..... 1503 General Petroleum Bldg.
Birmingham 1 ..... 1502 North Fiftieth Street	New York 6 ..... 3308-165 Broadway Bldg.
Boston 10 ..... 1002-201 Devonshire St.	Philadelphia 3 ..... 1616-1720 Walnut Street Bldg.
Chicago 4 ..... 2127 McCormick Bldg.	Salt Lake City 4 ..... 501 West 17th South St.
Cleveland 15 ..... 2236 Guildhall Bldg.	San Francisco 4 ..... 1533—200 Bush St.
Detroit 26 ..... 1501 Lafayette Bldg.	Seattle 1 ..... 1301 Henry Bldg.
Havana ..... 402 Abreu Bldg.	Tulsa 3 ..... 1625 Hunt Bldg.
Houston 2 ..... 2101 National Standard Bldg.	Washington 6, D. C. ..... 1163 Cafritz Bldg.

Water Supply and Treatment

The water monitor which is at work constantly to guard against any objectionable odor in the city supply.

A Continuous Water "Sniffer"

EVEN if water is pure, the public won't drink it if it has a foul smell. So the City of Chicago has developed a continuous "odor monitor" that lets the operator know immediately if odor problems are imminent. It is more helpful for plant control than the time-consuming and routine laboratory tests that have had to be used in the past.

Water passes through the monitor continuously. It is heated to 120° to 140° F. by an instantaneous electric heater, and released by a spray nozzle in a glass cylinder where the atomized odor is easily detected by a glass osmoscope nosepiece inserted in the cylinder.

Tests indicate that this method is more sensitive than the standard method. The intensity of the odor is determined by diluting the water with odor-free water until no odor is detected. Each water flow is measured by passing through tiny Rotameter flow meters. The threshold odor count can then be determined by the formula $\frac{S+O}{S}$ in which S represents the rate of flow of a sample in millititres per minute, and O represents the rate of flow of odor-free water at the same rate.

This odor monitor was described by H. H. Gerstein, Chief Filtration Chemist of the Chicago Department of Public Works, at the recent meeting of the American Water Works Association in Miami.

Roanoke Rebuilds Its Water System

AS OF January 1, 1949, the City of Roanoke annexed 11½ square miles of territory, containing a population of 16,000, and became a city of 26½ square miles of territory with a population of 91,070. Within the area annexed there are 10 privately owned water-supply systems, a very small portion of which had even the semblance of fire-protection facilities or even adequate domestic supply for dry periods.

The area served by the city-owned plant has a supply of more than twice its normal demands, but, nevertheless, in certain sections it was low.

Because of this situation, Roanoke retained the firm of Alvord, Burdick & Howson, of Chicago, to recommend a comprehensive plan to correct these difficulties. It was submitted early in 1950, showing generally the work required to overcome the deficiency of fire protection in the old part of the city and extend the city's system into all areas of the annexed territory, and reporting the extent to which existing private plants could be utilized were they acquired by the city. The engineers estimated, exclusive of the cost of acquiring title to the private plants, the cost of carrying out the outlined work to be slightly over $3,000,000.

This plan was accepted and adopted by the Council in principle. Late in 1950, the city authorized the issuance of $4,000,000 in bonds.

Roanoke has just accepted a bid of $1,293,043.23 from the Lynchburg Foundry Company for pipe 6, 8, and 12 inches in size, aggregating nearly 100 miles of pipe; and a bid of $185,515.50 for valves and hydrants from the Mueller Company.

Charles E. Moore, who had been connected with the water-works system for nearly 35 years, 28 of which as manager of the plant, has been temporarily relieved of his duties as manager and placed in full charge of the expansion program. The firm of Alvord, Burdick & Howson has been retained as consulting engineers.

Steady Pump Control with Float and Butterfly Valve

FOR more than 20 years, El Paso, Texas, has enjoyed fully automatic control of its wells and booster stations. The system employs a float and butterfly valve attached to the pump discharge.

The wells that El Paso uses developed considerable sand, for the first few years of operation, if the turbine pumps were started and stopped very often. For this reason, each turbine delivers its water to a covered settling basin where the sand may settle out.

A set of Byron Jackson booster pumps takes the water from these settling basins and delivers it directly to the mains of the distribution system. Pressures vary from 30 to 100 pounds per square inch. There are four covered concrete reservoirs located on hills in the city that float on the system.

A given booster pump is designed to handle only the output of the well when it is operating against the highest main pressure at that location. A drop of only a few pounds in main pressure will cause the booster discharge to exceed the steady flow from the well. Such an operating condition, over a long enough period, will cause the booster to drain the settling basin. If this happens, it either becomes air-bound and damaged, or delivers considerable air to the mains. Thus, the booster-pump discharge must be controlled.

This automatic control is simple. A butterfly valve is installed in the discharge piping of the booster pump. A float is installed in the settling basin, and it operates the butterfly valve through a shaft and links. The float consists of a 30-gallon, hot-water tank which develops more than ample power to operate the valve. The valve is set so that any change in the settling-basin water level will change the rate of pump discharge. Even though a main should break near by, the pump discharge would be brought back to that furnished by the well within a few minutes. A hand-operated valve also is provided to start and stop the pump.

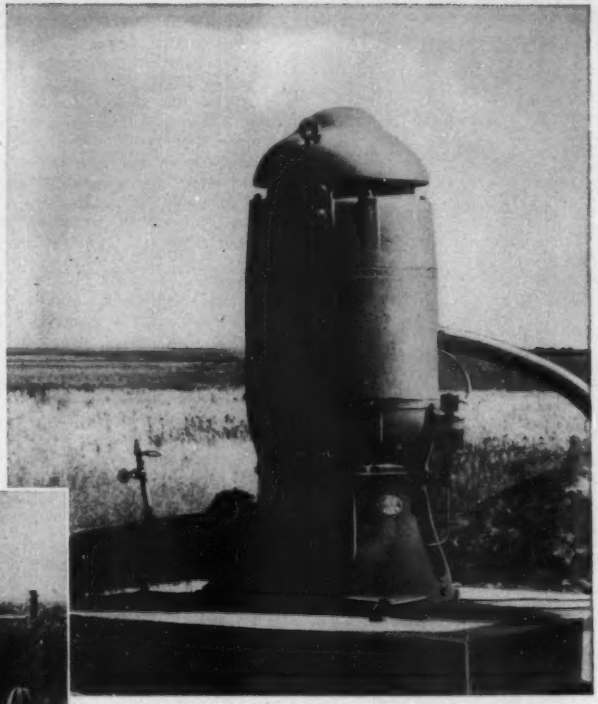
The water system has 12 of these butterfly-valve controls working against 100-pound pressure, controlling flows varying from 1,000,000 to 6,000,000 gallons daily. They have required no repairs other than repacking the stem about every two years. The reduction in pressure through the valve has been as much as 90 pounds, caused by a near-by pipeline break.

E. NEVINS, *Production Superintendent Water Department, El Paso, Texas*

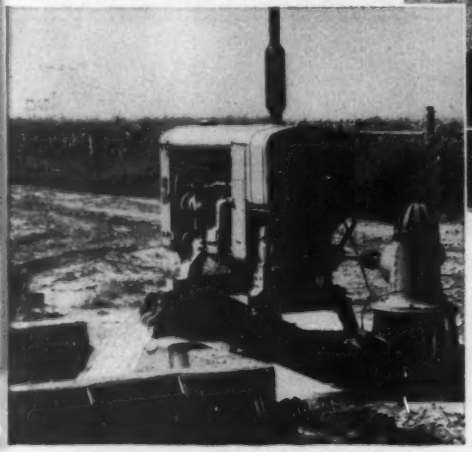
"WORK-TEAM"

of the irrigation industry

For heavy production at extra low operation cost, Layne built wells and Layne vertical turbine pumps are the most widely used work-team of the irrigation industry. Thousands of installations in well water irrigation areas have unmatched records of high efficiency and dependability. Capable of producing great quantities of water cheaply, they make well water irrigation a profitable business. Furthermore, their superior quality and rugged construction can always be depended on to provide years and years of fine service at extremely low upkeep cost.



IDAHO—One of the two 1,800 gallons per minute Layne vertical turbine pumps installed for irrigating potatoes, wheat, peas and hay crops.



NEBRASKA—An angle gear drive Layne vertical turbine pump powered with a gasoline engine. Installation is for irrigation corn and other grain crops.

The same type wells and pumps installed for irrigation are also the Nation's most widely used by cities, factories, railroads and processing plants of all kinds. All are built complete by Layne and Layne alone. No other make is so generally recognized for highest efficiency and longer lasting service. No other is so thoroughly proven by actual field performance records.

NEW CATALOG ON WATER SYSTEMS

Fifty-two pages of vitally interesting and helpful information on the Layne method of building well water systems; tubular and rock wells, special drilling services, shutter screens and vertical turbine pumps with a section on engineering and useful tables. A copy will be sent without obligation if requested on company letterhead.

LAYNE & BOWLER, INC. GENERAL OFFICES, MEMPHIS 8, TENN.

Layne
WATER SUPPLY
WELLS & PUMPS

Refuse Collection and Disposal

Roxboro, N. C., Landfill Operation

A CRAWLER tractor with a front-end loader does all the work of refuse disposal in Roxboro, N. C. (population 5,000), according to W. F. Timberlake, City Manager. At present, the tractor is reclaiming substandard land by using the "area" method of sanitary fill. Each day the trash is placed in the low-lying land, compacted by the tractor, and finally covered with dirt.

City Manager Timberlake reports that the Caterpillar D4 tractor is needed only about one-third of the time for this disposal work. During the rest of the time, it is used for excavation, street improvement, culvert construction, and earth fills.

The first step in Roxboro's landfill work is compacting the refuse. The city's Caterpillar D4 tractor, equipped with a Trackson Traxcavator, above, does the work. Each day's refuse accumulation is then covered with earth, below.

44 Degrees Below Zero

To the Editor of THE AMERICAN CITY:

I wish to call your attention to an error, which is obviously a typographical one, appearing in Part III of your series of articles in the May issue of THE AMERICAN CITY.

In your mention of the experimental sanitary landfill project at Mandan, N. D., on page 127, it is stated that "Temperatures dropped as low as 25° F. in December, 44°F. in January, and 25° F. in February."

Regardless of how sorely we shivering engineers in North Dakota wish that temperatures as stated were true, our professional ethics call upon us to correct the statement. These temperatures were in degrees F. below zero rather than above zero, as indicated.

Most of your readers, I am certain, will have recognized the error as such and it is hoped that those who have not yet ventured into our frontier lands will not have been confused or misled by it.

May I add that regardless of this extreme in cold temperatures, the Mandan sanitary landfill is proving to be an encouraging model of a desirable method of refuse disposal to those other cities in North Dakota inaugurating this method, including the capital city of Bismarck.

DONALD M. KEAGY, *Sanitary Engineer*
State Department of Health
Bismarck, N. D.

EDITORIAL COMMENT:

We stand corrected. To imply that the weather is cold in the Dakotas at 44° above zero is, of course, far from accurate. Our experience has been that at this temperature people do not even put on topcoats.

Commercial Disposers Save Cutlery

THE Dayton Biltmore Hotel operates a Jeffrey food-waste disposal unit sold by Pick-Edmunds & Company, 205 North High Street, Columbus 15, Ohio. The first advantage, I believe, is that this machine always keeps our garbage-room clean and free of stench.

Secondly, the concern that removes all the trash from the hotel is not allowed to carry any garbage to the city dump because of a city ordinance.

Thirdly, and very important to us, in the feeding of the garbage into this machine the operator salvages many pieces of equipment which otherwise would go out the back door. Our kitchen steward has kept an itemized list of articles saved; totals for the year 1950 are as follows:

Article	*Pieces Saved*
Silver	885
China	515
Glassware	116
Linen	84

DAVID TALLICHET
Catering Manager
The Dayton Biltmore
Dayton 2, Ohio

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NOW! a two-in-one fire fighter

Versatile John Bean H. P. V. gives High Pressure Fog and Volume at the same time!

500-, 600-, and 750-G.P.M. capacities. Complies with Fire Underwriters' requirements for capacities claimed.

The new H.P.V. Fire Fighter is the complete answer for protection against all types of fires. Bean High Pressure Fog unit gives you five important fire-fighting exclusives: (1) Carries own High Pressure water supply; (2) puts out fires faster; (3) clears the way for close-in work; (4) minimizes water damage; and (5) requires fewer men to operate. Write today for all the facts about the John Bean H.P.V. Fire Fighter.

Another innovation by the manufacturers of

Get all the benefits of High Pressure Fog plus these new volume pump advantages:

TROUBLE-FREE PUMP OPERATION—Rugged, solid case multiple-stage pump eliminates out-of-alignment bearings, reduces chances of pump failure. Operates simultaneously with High Pressure or alone.

FIRE PROTECTION—WHEN YOU NEED IT—John Bean volume pump handles up to 3 hose lines. Famous High Pressure pump supplies 2 High Pressure Fog lines.

FOOLPROOF AUTOMATIC PRIMING—Initial pump draft established quickly, automatically.

WATER COOLING LENGTHENS LIFE—Water-cooled gear case protects vital moving parts from damage by friction heat.

SIMPLIFIED MAINTENANCE AND REPAIR—Impellers and other pump parts easily accessible from underneath chassis *with no dismantling of pump housing.*

MAXIMUM PUMP PROTECTION—Midship mount protects pump from accidental collision or freezing.

BEAN *Original* **HIGH-PRESSURE FOG FIRE FIGHTER**

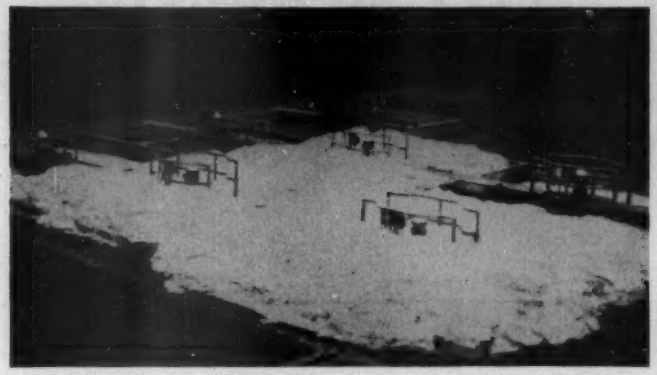
CAN BE MOUNTED ON MOST STANDARD TRUCK CHASSIS

FOOD MACHINERY AND CHEMICAL CORPORATION

JOHN BEAN DIVISION, DEPT. 129, LANSING 4, MICH. • JOHN BEAN DIVISION (WESTERN) 401 MAIN ST., SAN JOSE, CALIF.

BUILDERS OF BEAN HIGH-PRESSURE PUMPS FOR OVER 60 YEARS

Sewerage and Sewage Treatment



On a November morning in 1949, the Batavia, Ill., plant looked like this.

What Detergents Do to Sewage Treatment

SYNTHETIC detergents (soap is a detergent also, formed of natural fats and oils) first won the housewife, particularly in hard-water areas. Now they command the attention of the sewage-treatment operator. The effect, according to R. E. Anderson, of Chicago's North Shore Sanitary District, and Harvey E. Berg and Dr. Carl E. Johnson of the National Aluminate Corporation, is two-fold.

First, they create a nuisance at the sewage-treatment plant if aeration is employed; and secondly, they apparently thrust a greater load on the secondary processes. These two results were explained at the recent Northern Section Conference of the Illinois Sewage and Industrial Waste Works Operators at Elgin, Ill., last fall.

Synthetic detergents are of three types: anonic, in which the negative charge is the active portion of the molecule; catonic, with positive charge active, or neutral, which does not ionize. Their basic advantage to the housewife is that they do not react with the dissolved solids in the water to form precipitates as do natural soaps. Since anonic detergents are less expensive, they appear more frequently on the present competitive market. Some synthetic detergents do not foam; consequently the manufacturer will add a foaming agent to satisfy the housewife.

The detergent becomes a nuisance when it generates foam or suds in the aeration tanks, although John Hood, Superintendent of Sewage Treatment at Ridgewood, N. J., has found that aeration itself may cause the creation of foam, without detergents being present.

Nevertheless, the foam does cause operating difficulties. The Batavia, Ill., sewage-treatment plant had its entire battery of aerators concealed from view by foam 8 to 10 feet deep, according to Frank Olsen, Superintendent.

The added load thrown on the secondary processes is caused by the difficulty that ordinary solids may have in settling through the foamy sewage. The foam forms a structure that holds them on the surface and can carry them through the primary settling basins. The result is a heavier load on the secondary processes and fewer solids to the digester.

Some have recorded that the synthetic detergents reduce gas production; this should not be the case, however, since most of the detergents are non-toxic. The action of the bacteria in the sewage-treatment process should eventually destroy the detergent, along with most other polluting materials.

Garbage Grinders Stop Trichinosis Threat

THE public-health aspects of garbage disposal might be further emphasized by reference to the relationship of trichinosis in garbage-fed hogs and the incidence of disease (16.5%) in the general population. Since many communities still dispose of garbage by feeding it to hogs, the point would be pertinent and substantiate the arguments for improved methods of garbage disposal.

"We are presently seriously considering the redesign of our suggested hospital-kitchen layouts to provide for the use of food-waste disposal units. It appears that such a step would result in improved sanitation in the food-handling areas of the hospital."

M. C. HOPE, *Sr. Sanitary Engineer*
Public Health Service
Washington 25, D. C.

Compact and Effective Plant in California

This sewage-treatment plant is designed for a flow of 1.25 mgd to serve Sanger's 12,000 people. It employs primary treatment with separate sludge digestion, and the final effluent is lagooned and then discharged into King's River. Equipment includes a Dorr type S bar-screen, a 15-inch wide, 21-foot long Dorr detritor, a 45-foot-diameter Dorr primary clarifier, and a Dorr type MA digester with 45-foot diameter and 22-foot side depth. The plant was designed by John S. Bates, consulting engineer, of Berkeley, Calif., and was constructed by the Ke-Ston Construction Company, of Maywood, Calif.

Adams Advantages pay off for CITY OF ODESSA TEXAS

ONLY ADAMS OFFERS ALL THESE OUTSTANDING ADVANTAGES

- 8 Overlapping Forward Speeds
- High-Arch Front Axle for Clearance
- Push-Button Starting from Cab
- Positive Mechanical Controls
- Wide Range of Blade Adjustments
- Exceptional Blade Clearance in All Operating Positions
- Balanced Weight Distribution
- Easy Access for Fast Servicing
- World-Wide Dealer Service

In Odessa, Texas — as in hundreds of other cities and towns the country over — Adams Motor Graders are saving time and money on all types of projects . . . building, rebuilding and maintaining city streets and alleys — backfilling over sewers, water mains and gas pipes — leveling playgrounds, parks, parking areas, etc. . . . You'll find in the Adams line a model with the right power and right capacity to meet individual needs exactly. Ask your local Adams dealer for complete information on the machine best suited to your requirements.

J. D. ADAMS MANUFACTURING CO., INDIANAPOLIS, IND.

Make your next motor grader an **Adams**

Street Construction & Maintenance

Palm Springs, Calif., Street Paving

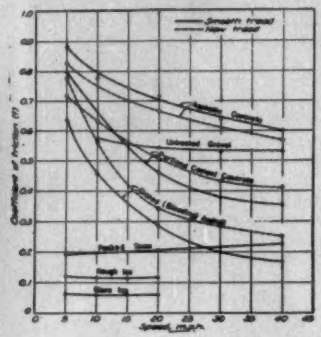
Where the air is warm and mountains rise in the distance for vacationers to enjoy, streets, nevertheless, still have to be maintained. This shot was taken in Palm Springs, and shows a Caterpillar grader at work on the streets.

Cities Get Gas-Tax Aid in North Carolina

STREETS in North Carolina municipalities that form a part of the state highway system, will in the future be maintained and reconstructed by the State Highway and Public Works Commission.

In addition, the remaining streets will receive funds amounting to half a cent per gallon from the tax on motor fuel. Of this fund, half will be appropriated to the various municipalities on the basis of population, and half on the basis of mileage of streets which are not a part of the state highway system.

The new law classifies a street as "a public road maintained by the municipality and having an average width of not less than 16 feet." The funds are to be used for constructing and maintaining streets only, and separate accounts will be required for these receipts and expenditures. The municipality may contract with the State Public Works Commission to do the proposed work; or it may award contracts in its own name or undertake to have the work accomplished by force account.



These coefficients of friction show how various street surfaces react both to smooth tires and tires with good tread.

No Justification For Slippery Streets

NO CITY has any justification for posting "Slippery Road" signs—they are a confession of faulty construction and maintenance, according to Bulletin No. 27 of the Highway Research Board, discussing road-surfacing properties. Streets can be built with coarse-grained surfaces such as asphaltic concrete or rock-chip treated surfaces. With these surfaces, a smooth tire has a higher coefficient of friction than a tire with new tread.

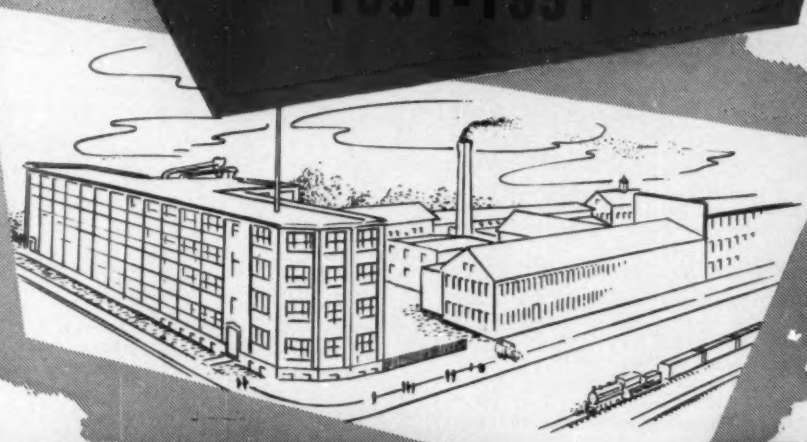
On streets where the surface is glazed to smoothness, such as bleeding asphalt surfaces, the coefficient of friction, high at low speeds, drops sharply at higher speeds until it approaches that of surfaces covered with ice.

Machine-Laid Seal Coating in Waukesha, Wis.

W. E. Dick, City Engineer of Waukesha, Wis., uses machine-laid sand-asphalt surfacing in a light layer for seal coating. The picture at the left shows a Barber-Greene mixer applying the surface. A Buffalo-Spring-

field roller goes to work on the newly laid surfacing, at the right. Waukesha experience has shown that this process results in a far longer life and more satisfactory riding surface than the customary "seal coating."

100 Years
IN THE PUBLIC SERVICE
1851-1951



During 1851, in the City of Boston, Massachusetts, was made the first practical application of the Morse telegraph to fire signaling, providing a public and always accessible means for calling the fire department. John N. Gamewell shortly thereafter, acquired patent rights for the system of fire signaling thus applied in Boston and which has since become universally known as The Gamewell Fire Alarm System.

The well estabished reputation for reliability, durability, and efficiency of Gamewell equipment, produced by a small force of highly skilled workmen, has resulted in the widespread use of The Gamewell System not only in the U. S. A. but also in many other countries.

The Gamewell Company, lineal successor to John N. Gamewell, deeply appreciates the widespread confidence in its products and will continue to incorporate therein features dictated by 100 years experience that are essential to the protection of life and property.

The GAMEWELL COMPANY

NEWTON UPPER FALLS 64, MASSACHUSETTS

IN CANADA: NORTHERN ELECTRIC COMPANY, LTD., BELLEVILLE, ONTARIO

175 Street Trees Chipped Up in 10 Days

WIDENING Bay View Avenue in Great Neck, N. Y., required the removal of 175 trees. Placing an 11-foot base course of concrete on either side of the existing 18-foot concrete pavement and giving the new job a bituminous macadam top was the job given the Zara Contracting Company, of Lynbrook, N. Y., by Nassau County.

The trees were taken down to a height of 4 to 12 feet above ground by the subcontractor, Asplundh Tree Expert Company. With an Asplundh chipper, the limbs and brush were reduced to chips. Four loads of brush are thus reduced to a single truckload. Disposal proceeded at a rate of about 25 trees a day. The stumps were pulled by the general contractor.

Michigan Self-Insurance Fund Wiped Out

Lorain Moto-Crane used as an aerial ladder when other means of reaching the seventh floor were unavailable.

THE Michigan State insurance fund amounting to only $1,500,000 was wiped out in February 1951 by the burning of the state office building in Lansing, with destruction estimated at several millions more than that. Since Michigan taxpayers will have to carry this uninsured loss, the legislature swiftly became aware of the evils of self-insurance," said *The Insurance Advocate.*

The state library, located in a portion of the wrecked building, was privately insured last August for $2,000,000. The Michigan Association of Insurance Agents paid the premium of $3,011, in the belief that the legislature would appropriate a reimbursing amount at this year's session.

It was possible to insure the library because of a 1945 amendment in the original fire-fund law which permitted exceptions from the general rule that all state property must be insured in the fire fund. This amendment permitted the placing of private insurance if such a step were authorized by a special board of the auditor general, state treasurer, and insurance commissioner, empowered by the Amendatory Act to review cases in which excessively high, concentrated values or exceptional hazards existed.

The legislature's lower chamber, while the fire was still burning, adopted a resolution designating a five-member committee to probe causes of the fire and to check on protective facilities for other state-owned structures.

NATIONAL BOARD OF FIRE UNDERWRITERS
85 *John St.*
New York, N. Y.

Twenty-Seven Departments in County-Wide Fire Radio

CHIEFS of the 27 fire departments in Wayne County, N. Y., which are mostly volunteer groups, are buying two-way mobile radio units for their vehicles to establish a county-wide network for mutual aid and civil defense. Walkie-talkie radio sets will also be added by each department. The Wayne County Fire Chiefs Association, which originated the plan in the county, states that all 67 fire-fighting vehicles, 27 chiefs' cars, and other emergency equipment will be radio equipped.

A complete headquarters FM radio communications station, built by the General Electric Company, will be located at Lyons, the county seat. It will be supervised by Chief John Stephans of Lyons, who heads the county's mutual-aid fire program.

When a volunteer fire department is called from its own quarters to handle a near-by emergency, the New York State Mutual Aid Plan functions to send firemen from another location to the vacated area. When a department needs help to handle an emergency, the Plan not only furnishes the help, but automatically sees that the helpers are replaced while they are away from their own quarters. The new radio system will permit these movements with speed and a minimum of confusion.

The walkie-talkie radios will keep men on the pumping engines in constant touch with those at the scene of a fire. Calls for more or less water pressure will be speeded by radio. "In this type of service, pumping engines are sometimes as much as a mile from the fire," said Chief Stephans. "The system went on the air on April 6, 1951, and during the first month, we used it successfully four times in mutual aid. In case of emergency, we shall be in touch with all our units as if we were actually with them."

TOUGH SWEEPING AHEAD?
HERE'S WHY WAYNE CAN DO THE JOB FASTER AND BETTER-FOR LESS!

Wayne Model 450 Street Sweeper

GREATER CAPACITY—Wayne's hopper capacity of 3 cubic yards—largest effective capacity of any sweeper—means more curb miles swept between trips to the disposal point, *more dirt handled per day*.

FASTER LOADING—The Wayne 450 is equipped with a dirt elevator capable of handling 1¼ cubic yards of dirt *per minute*. You get fast, easy loading without backtracking even under the worst dirt conditions.

LARGER GUTTER BROOM—The Wayne is engineered to *dig out dirt*—from indented drains, from curb returns, from corners—without leaving dirt or damaging tires.

MORE MANEUVERABLE—Three wheel construction lets you turn on a dime...enables the Wayne to handle the cleaning on narrow streets, between parked cars—in every hard-to-get spot in the city. Sweeps every curb-return sparkling clean.

GREATER SPEED—The Wayne hauls its load *at maximum traffic speeds* to final disposal. And it's powered and geared for every sweeping condition and all traveling speeds required.

WAYNES LOVE TOUGH SWEEPING. They're built through and through to give you more clean curb miles per day, under all conditions. No matter what street cleaning methods you are now using, it will pay you to investigate the advantages of a Wayne 450 Sweeper today. Write for the full details.

MORE THAN 200 CITIES are using WAYNE Sweepers for economical street sanitation. Outstanding Model 450 features include: Rear wheel steering for maneuverability...largest effective hopper capacity of any sweeper...low body design for full forward vision...forward 42" gutter broom ...full floating broom suspension. *For details on a dozen other WAYNE features—write today.*

WAYNE

Sold and serviced throughout the United States by a fine distributor organization.

WAYNE MANUFACTURING COMPANY

MANUFACTURERS OF STREET SWEEPERS

1201 East Lexington Street, Pomona, California

Airports and Aviation

Airway Beacon Lights Available

A SUBSTANTIAL number of airway beacon lights and towers are going on sale to the general public this summer, Civil Aeronautics Administration officials reveal in Washington.

The beacons are surplus because the CAA has revised its standards for airway beacons in the interest of economy and efficient operation, and a number of airway and intermediate field beacons have been extinguished in non-hazardous areas.

During the past year, the CAA has transferred a number of beacons to public and privately owned fields for continuing use as aeronautical aids. Only a part of the beacons could be disposed of in this way, however, and 400 or 500 are expected to be placed on public sale, mostly in the Midwest.

The beacon lights vary somewhat in size, but most are 24 inches in diameter with automatic lamp changers. The 500-watt lamps with which they are equipped give more than 2,000,000 candlepower, but lamps of various intensities are available through commercial channels.

The beacons are mounted in such a way that they can be used as high-power hand-operated searchlights, either on the ground or aboard ships. They are suitable for providing floodlighting of near-daylight intensity over small areas.

With many beacon installations comes an extra dividend—a pair of course lights 14 or 18 inches in diameter, and a heavy-duty one-sixth horsepower motor. The course lights, like the beacons, can be equipped with a variety of lamps, and they are especially desirable for floodlighting parking and work areas. The standard lamp provides 268,000 candlepower with a relatively broad beam when used without the color filter.

Also becoming surplus are many of the towers on which the beacon lights were mounted. The towers are mostly 51 feet high.

This is the type of light that the CAA plans to make available shortly.

Details on the surplus beacon lights and towers may be obtained from the regional offices of the Civil Aeronautics Administration, or from their central offices in Washington, D. C.

This photograph shows the board that is used at the Westchester County airport, in White Plains, N. Y., to facilitate maintenance of lighting equipment. It was devised by John C. Stevens, above, who is operations manager.

Field-Condition Board Aids Lighting Maintenance

THE Westchester, N. Y., County airport uses this speedy method for recording inoperative or burned-out runway, threshold, or other airport lights. It also saves time for the maintenance electrician in identifying the units or lights which need servicing. It keeps a continuous check between the airport maintenance and operations departments and the control tower.

It consists of an ordinary school-type blackboard with a map of the airport runways, taxiways, buildings, and wind indicators painted on it. Each runway, threshold, and other field light is shown on the map to scale with an identifying number corresponding with the number painted on the concrete pad of each light out on the field. When the control-tower operator sees an inoperative light, he immediately notifies Operations of its approximate location. A service man is sent out to replace the lamp or to identify its number if it cannot be restored to service at once. The inoperative light is circled in white chalk on the board until the repairs have been made.

All usable or soft-turf areas, runways, taxiways or other paved areas undergoing repair are also marked on the board as a constant check against the maintenance crew.

FROM EVERY ENGINE— DEPENDABLE POWER

TEXACO SIMPLIFIED LUBRICATION PLAN — Ask your Texaco Lubrication Engineer for full details on the Texaco Simplified Lubrication Plan which requires only *six lubricants* for all major needs. This remarkable plan simplifies your lubrication setup, saves time, trouble and money. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N.Y.

AT LOWER COST ...when you lubricate with TEXACO URSA OIL X★★

To keep your machinery on the job and out of the repair shop, lubricate all Diesel and heavy-duty gasoline engines with *Texaco Ursa Oil.*★★ Detergent, dispersive *Texaco Ursa Oil X*★★ prevents carbon, gum and sludge . . . stands up under heat and pressure . . . gives bearings full protection against wear and corrosion, even under severest operating conditions. Result — powerful, dependable performance . . . less down time . . . fewer repairs.

Cost-saving *Texaco Ursa Oil X*★★ keeps rings free and ports open for better compression and combustion. Fuel consumption is reduced, parts last longer and maintenance costs drop. Operators everywhere report more reliable and economical engine performance, thanks to *Texaco Ursa Oil X*★★*!*

☆ ☆ ☆

For savings in chassis lubrication, use *Texaco Marfak.* Its tough, adhesive protecting film assures greater protection for longer periods between overhauls. *More than 400 million pounds of Texaco Marfak have been sold!*

In wheel bearings, use *Texaco Marfak Heavy Duty.* It seals itself in the bearings and seals out dirt and moisture, won't leak onto brakes . . . requires no seasonal change.

Crawler track mechanisms run better, last longer when protected with *Texaco Track Roll Lubricant.* It gives longer lasting protection against moisture, dirt and wear under all operating conditions.

TEXACO

TEXACO Lubricants and Fuels

FOR ALL CONTRACTORS' EQUIPMENT

Get What You Want—No Charge!

Please check over the list of interesting free catalogs on this and following pages. To obtain the literature you want, write directly to the manufacturers at the addresses given. If you prefer, you may circle the identifying numbers on this coupon and mail to THE AMERICAN CITY, *470 Fourth Ave., New York 16, N. Y., and we will see that catalogs are sent to you without expense or obligation.* 8/51

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Name ..... **Position** .....

Address .....

Heavy-Duty Trucks

701 Oshkosh Motor Truck, Inc., Oshkosh, Wis., on request will supply information on its heavy-duty, all-wheel drive motor vehicles. In the 4-wheel drive type, trucks are made with a rating ranging from 25,000 pounds up. The six-wheel drive has a range from 47,000 to 95,000 pounds. Among other features of these trucks are: positive automatic locking differential; one-piece axle housing, and power actuated brakes with the brake drums mounted on the wheels.

Triple Combination Fire Apparatus

702 Modern design and rugged dependability are features of the 750-1000 gpm custom-built triple combination fire apparatus of the Oren Roanoke Corp., Roanoke 16, Va. The machine is available in standard models or with variations to meet individual requirements of your community. It has multi-service centrifugal pumps and high-output overhead valve engines.

Clay Pipe

703 A four-page bulletin of interest to contractors, architects, and builders has been published by the Robinson Clay Product Co., 65 W. State St., Akron 9, Ohio, manufacturer of clay pipe. Condensed specifications are provided for Robinson vitrified clay pipe, perforated clay pipe, Skip-Pipe, clay liner plates, clay flue lining, chimney tops and bases, vitrified clay meter boxes, Lap-Lok wall coping, and septic tanks with burned-in baffles.

Combination Tractor And Air Compressor

704 Tractair is a combination tractor-and air compressor. A product of the Le Roi Co., Milwaukee 14, Wis., it can be employed for digging, mud jacking, pavement patching, and drilling. The machine's attachments include front-end loader with 8 quickly interchangeable accessories and a hydraulically controlled backhoe for digging ditches 12 to 22 inches wide and 6 to 7 feet deep.

Community-Wide Garbage-Grinder Plan

705 *Community-wide Garbage-free Living* is the title of a brochure on the community-wide garbage grinder plan of the Given Mfg. Co. When writing for a free copy, address your query to Dept. AC7, Given Mfg. Co., 1250 Wilshire Blvd., Los Angeles 17, Calif. The plan reduces costs, lowers taxes, and relieves officials of the liability of financing and selecting garbage grinders. The company, which manufactures the Waste King Pulverator, states that this plan will eliminate unsanitary, unattractive garbage pails, breeding places for flies, rats or vermin, and will improve the health and sanitation of the community.

Snow Plow Spreads Materials 8 to 20 Feet

706 The Wausau spreader, trailer-type snow plow, spreads materials from 8 to 20 feet. Designed and engineered by the Wausau Iron Works, Wausau, Wis., it is an ideal unit for ice control or seal coating of streets. It gives positive control of thickness of width, and of direction of the material to be spread. Write for details.

Playground Equipment

707 The American Playground Device Co., Anderson, Ind., has published its new No. 40 catalog which contains illustrated description of its equipment for parks, playgrounds, and swimming pools. Among the features are: frames and members made of new, hot-dip galvanized pipe; no unsightly, imperfect welded joints or fittings; certified malleable frame fittings which can never break, and the finest, well seasoned select Hardwood and Oregon fir.

Service for Elevated Water Tank Maintenance

708 The Dixie Tank and Bridge Co., P. O. Box 14, Memphis, Tenn., for the past 33 years has serviced thousands of water tanks. In its recent publication, *Sound Principles of Water Tank Maintenance*, Vol. 8, No. 1, the company reported that its method of repairing seams, rivets, and pits is by welding to add tensile and structural strength to the tank for public safety, and to give the tank many years of useful service. Among the subjects discussed are Safety Factors, Leaks in Old Tanks and in New Tanks, and Scaling Your Tank with Power-Driven Tools.

Reversible Snow Plow

709 The Frink reversible trip-blade Sno-Plow is the newest member of the family of Frink Sno-Plows for motor trucks. According to Frink Sno-Plows, Inc., Clayton, N. Y., the machine is ideal for use on city and village streets, town, county, and state highways, as well as airports and factory parking areas. The plow's moldboard can be set to bulldoze the snow straight ahead or it can be angled to either side at 15°, 26°, 37°, or 42° to carry the snow to the side. It is quickly adjustable from plowing to scraping position.

Sewer and Water Pipe Cleaning

710 Pipe-cleaning tools and equipment are manufactured by the Flexible Underground Pipe Cleaning Co., and the Flexible Sewer-Rod Equipment Co., 9059 Venice Blvd., Los Angeles 34, Calif. The power drive and propeller tools remove heavy scale from waste water lines as large as 12 inches, and the power bucket machine is capable of removing five cubic yards of rock and sand from one sewer line alone.

(Please Turn to Page 25 for More Literature)

Swimming Pool Filter

711 The Sparkler Model SC filter is ideal for swimming pools, municipal water systems, or large industrial uses because it provides a low-cost, self-cleaning means of filtration that meets the most exacting requirements for health and purity. This model is a diatomite filter utilizing hollow discs covered with prefabricated media as the filter element. It is designed and constructed to eliminate by-passing and channeling. For full details, write to the Sparkler Mfg. Co., Mundelein, Ill.

Blowers—In Centrifugal Or Rotary-Positive Design

712 The Roots-Connersville Blower Corp., 16th and Marshall Ave., Connersville, Ind., on request will send details on its centrifugal and rotary-positive designed R-C dual-ability machines to move air or gas in any quantities. Available are single-stage or multi-stage units from the company's standard lines, with flexibility as to drives and other accessories to meet your needs. The equipment is particularly useful in supplying air for aeration tanks in water and sewage works.

3-5-Ton Tandem Roller

713 The Galion Iron Works & Mfg. Co., Galion, Ohio, has issued a catalog on its new model 3-5 ton variable-weight tandem roller describing and illustrating many new improvements in its construction and operation. Among the new features are: hydraulic steering, spur-gear final drive with machine-cut alloy steel gears, constant-mesh, transmission, and a pneumatic-tired towing attachment.

Engineered Timber Bridges In Five Basic Types

714 Engineered timber bridges in five basic types are made by Timber Structures, Inc., P. O. Box 3782-X, Portland 8, Ore. They are the bowstring truss bridge, deck arch, girder, composite deck, and parallel chord truss. The bridges are described in a new brochure, *Permanent Timber Bridges*, which will be sent on request.

Parking Meters Solve Traffic Problems

715 Off-street metered parking, as planned by the Dual Parking Meter Co., Canton 2, Ohio, a subsidiary of The Union Metal Mfg. Co., helps to solve traffic problems in congested areas. The manufacturer has prepared two pamphlets on its equipment; one, *Off-Street Metered Parking*, gives "helpful facts for progressive communities,' the other,, *Dual Gearshift Automatic*, describes the only dual-driven, self-starting gearshift meter. The machines have a strong, die-cast coin box which holds up to 225 assorted coins and is adjustable to sealed or dump-type collection, and a meter setting which is performed automatically when the coin is deposited.

ANOTHER NEW OSHKOSH CUSTOMER

SIGNS ON THE DOTTED LINE.....

THE CITY OF YONKERS . . .

in Westchester County, New York, recently purchased this fleet of six Oshkosh 4-wheel drive trucks for sanitation department use and snow removal.

Repeat orders for Oshkosh Trucks prove their on-the-job dependability; new orders, like this from the city of Yonkers, mean COMPETITIVE superiority—an important consideration today when every dollar counts! Oshkosh trucks—with powerful traction in ALL wheels—are built for years of grueling work: municipal service . . . on-and-off highway hauling . . . snow removal . . . road maintenance . . . and other year 'round jobs, with minimum upkeep expense. Ask any user!

Service stations located at convenient points throughout the United States and Canada.

Write for new "IB" bulletin which shows why—feature for feature—no truck equals an Oshkosh!

OSHKOSH MODEL W-1700 USED AS MUNICIPAL DISTRIBUTOR

Oshkosh trucks are adaptable for many municipal jobs: street flushers, oil distributors, sewer flushers, wreckers, dump trucks. Trip and V-plows mounted easily.

OSHKOSH 4 and 6 WHEEL DRIVE TRUCKS

OSHKOSH MOTOR TRUCK INC.
OSHKOSH WISCONSIN

Which Catalogs Interest You?

Write directly to the manufacturers, or use the coupon on page 23

Spreads Sand, Other Material

716 Three features of the new and improved Model R Hi-Way spreader announced by the Highway Equipment Co., Inc., Cedar Rapids, Ia., are: ability to spread aggregate either forward or reverse with control of material flow; adjustable width of spread, and handling of all types of aggregate from fine sand to crushed stone. The Model DD sand and cinder spreader means low-cost ice control. It also can be used to spread calcium chloride for dust control, sand, and other material for seal coat work.

For Sewer Cleaning

717 The Sewer Scooter is a 100% self-propelled machine for from 6 to 96-inch sewers. Manufactured by the Fitzgerald Engrg. Co., Inc., P. O. Box 289-G, Coral Gables 34, Fla., it completely cleans sewers of all sediment in a quick and efficient operation.

Fire Salvage Covers, Tarpaulins

718 Fulton's Shuredry Green-Bak salvage covers save thousands of dollars for victims of fire by preventing water penetration and seepage. The manufacturer, the Fulton Bag and Cotton Mills, Atlanta 1, Ga., also produces Fulton triple-strength tarps of a 1,000 uses—for garbage-truck covers and protection of equipment and supplies exposed to weather.

Power Operator For Gate Valves

719 The Payne Dean & Co., of Clinton, Conn., publishes descriptive literature on modern mobile power for gate-valve operation. The 5-hp, 4-speed electric Gatender all-steel gate hoist is adapted to any make of floorstand. It will operate underground gates up to 60 inches.

Grass Seed

720 The Dickinson Co., 2764 W. 35th St., Chicago 32, Ill., on request will supply literature on its lawn grass seed which has been blended according to tested and improved formulas. The company supplies its product for parks and public grounds throughout the nation.

Protect Your Property With Tamper-Proof Fence

721 Realock fence gives you tamper-proof protection because essential fittings are designed to permit the removal of bolts from the inside only. Produced by the Wickwire Spencer Steel Division, 361 Delaware Ave., Buffalo 2, N. Y., of The Colorado Fuel & Iron Corp., Denver 2, Colo., Realock fence is constructed of heavily galvanized steel wire, is weather-resistant, extra durable, and practically maintenance-free.

Water Sprinklers

722 Water sprinklers for golf courses, estates, lawns, cemeteries, and athletic fields are manufactured by The Skinner Irrigation Co. of Troy, Ohio. The Greenkeeper provides a large coverage with its slow-speed, revolving sprinkler. The main nozzle delivers an effective, finely broken stream, supplemented by a secondary spray which waters the central area. Full details on this and other models are described in Circular No. 349 issued by the company, entitled *Skinner System Sprinklers for Use with Hose, Snap Valves, and Portable Pipe.*

Compressed Air Operates Siren

723 Compressed air operates The Diaphone, a product of The Gamewell Co., Newton Upper Falls 64, Mass. It is characterized by great sound-producing power, distinctive tone, effective coding of signals, operability under all conditions, and a reserve capacity. Civil defense officials will find this company's literature helpful.

Asphalt Plants

724 Standard Steel Corporation's recently developed S.M. Series Asphalt Paving Plant line is the subject for two new 4-page bulletins. One publication discusses operators' experience with the equipment in the field, and the other, construction details of the plants which are available in batch capacities from 500 to 6,000 pounds. New structural improvements described and illustrated include individualized drives, easy, one-man operation, sectionalized mixer linings, and modern vertical streamlined design. For copies, write to the Standard Steel Corp., 5001 S. Boyle Ave., Los Angeles 58, Calif.

Cranes, Diggers, Mixers

725 What sort of equipment will make the operation of your street department, water department, or sewer department easier? Can you use a mobile crane? The Koehring 25-ton truck crane can move at 30 to 35 mph and is readily converted to dragline, clamshell, pile driver, or hoe. Do you have paving slabs that have settled? The Koehring mud-jack will solve this problem. Are you extending water and sewer utilities? Then you would find helpful the Parsons 221 Trenchliner. Have you concrete to pour for patching or sidewalk construction? Koehring Kwik-Mix 11-S Dandie gives good performance for these jobs. For literature on any of these, write to the Koehring Co., Milwaukee 16, Wis.

Badges

726 Through consistent merchandising in recent years, the name Blackinton has become synonymous with quality badges and insignia for fire, police, and other municipal departments. Illustrated folders showing approximately 90 of the most popular designs are now available. A complete line of badges for plant protection and civil defense are also manufactured by V. H. Blackinton & Co., Inc., Attleboro Falls, Mass.

Asbestos-Cement Pressure Pipe

727 Century asbestos-cement pressure pipe keeps installation costs low, and gives permanent, trouble-free service according to the Keasbey & Mattison Co., Ambler, Pa. It is made in two pressure classes of 100 and 150 pounds per square inch. Every section is hydrostatically tested to insure ample reserve to handle normal water hammer. Pressure pipe is light and easy to handle. It is non-metallic and cannot rust or corrode.

Chlorine Residual Control

728 The Wallace & Tiernan residual chlorine recorder's charts show any irregularities in the chlorination process, show the way to correct difficulties, and give continuous proof of proper operation. The chlorine and chemical control equipment is manufactured by the Wallace & Tiernan Co., Inc., Newark 1, N. J. The company states that the equipment provides greater uniformity of water quality; helps eliminate wastage of chlorine by over treatment, and prevents possible health hazards which may result from under treatment.

Silk Screen Equipment For Traffic Signs

729 For information on silk screen process colors, equipment, and supplies, including a new squeegee sharpener, write The Naz-Dar Co., 469 Milwaukee Ave., Chicago 10, Ill. The weatherproof enamel colors are being used by many municipalities and state departments for printing street markers and signs including Scotchlite.

House Numbers

730 Details of *Modern House Numbering* will be furnished by Premax Products, Division of the Chisholm-Ryder Co., Inc., 5146 Highland Ave., Niagara Falls, N. Y. The manufacturer states that this will guide every city striving for a well-planned house numbering system as a means of identifying one home from another.

Designs of Modern Fire Stations

731 A 52-page brochure showing 66 of the most modern American and Canadian engine houses is Volume 3, *Fire Station Design*, offered by the Circul-Air Corp., 575 E. Milwaukee St., Detroit 2, Mich. It will be sent without charge upon request from any chief, commissioner, mayor, or other municipal official. Included in the book are plans of fire stations in both large and small cities.

Diesels Cut Power Costs

732 If you're in search of an economical power system, contact the Nordberg Mfg. Co., Milwaukee 7, Wis. Information will be supplied on Nordberg two- and four-cycle oil-burning and Dualfuel diesels, and gas-burning engines in sizes from 10 to 9,600 hp.

Cuts Concrete Fast

733 The Tri-Line Concrete cutter works like a rip saw, cutting to a depth of 6½ inches if desired. To replace a defective area, the pavement is cut to 2 or 3 inches, the old concrete broken out and the new laid with straight-edged wall-to-wall contact. In street-widening the diamond blade cuts through the sidewalks, saving as much of them as possible. The device is effective in preparations for repairing water and sewer pipe and damaged sections of concrete streets and runways. For illustrated folder, write the Tri-Line Co., 921 Carroll St., Racine, Wis.

These Meters Are Interchangeable

734 Manufactured by the Neptune Meter Co., 50 W. 50th St., New York 20, N. Y., Trident water meters are interchangeable so that they will not become obsolete. The company states that this feature means putting modern, improved parts in meters whose sound basic design has not changed in 50 years.

Guards Against Leaks

735 Cast-iron soil pipe and fittings give you permanent protection against groundwater pollution and escaping sewer gas, according to the Cast Iron Soil Pipe Institute, Heurich Bldg., 1627 K St., N.W., Washington 6, D. C. It has structural strength and safeguards against fracture or leaks from normal ground settlement or root infection. For full details, write to the Institute.

These Wells Mean Low-Cost Water

736 Low-cost water and lifelong installation are features of Caisson Wells, according to Caisson Wells, Inc., groundwater engineers and contractors of 33 W. 42nd St., New York 18, N. Y. The company reports that it can produce water at a cost of less than 2 cents per 1,000 gallons, including pumping, operation, maintenance, and amortization. Write for full details.

Digger-Crane-Shovel

737 Bulletin No. 19512 published by the Badger Machine Co., Winona, Minn., reports on the Hopto, hydraulically operated power take-off digger-crane-shovel. No clutches, drums or brakes are needed as all operations are hydraulic. Direct-connected crowd cylinder excavates hard soils with efficiency. The machine's few moving parts, large capacity, high lift, and quick change attachments makes it practical equipment for small or large municipalities.

New Loader Scoops, Loads, Digs, Dozes

738 The new Skyline 90 loader scoops, loads, digs, and dozes. It can be employed for snow, leaves, dirt, trash, sand, and gravel. Manufactured by The Skyline Corp., 1521 McLean Blvd., Wichita, Kans., the machine's versatility makes it a year round investment for municipalities.

(See page 26 for more bulletins)

Obtain this Literature Free of Charge!

Write directly to the manufacturers, or use the coupon page 23

Make Grass Greener With These Feeders

739 Those municipal parks and lawns can be kept verdant green with a strong, healthy turf when the proper plant food is applied through Master Planter distributors. These range from the small-home sizes to the large park and golf-course size, 36 inches wide, capable of holding 120 pounds of fertilizer and being tractor drawn. Bulletins on these distributors will be supplied by the Master Planter Co., Benton Harbor, Mich.

Snow Plows

740 Alert municipal officials will begin now to plan their program for snow clearance during the winter. For those seeking information on proper equipment, The Baker Mfg. Co., 503 Stanford Ave., Springfield, Ill., will furnish literature on its snow plows, among which are the Baker V-type, the reversible tripping blade, and the one-way tripping blade.

Slender Steel Poles For Street Lighting

741 The grace, lightness, and strength of tubular steel poles have made them increasingly popular for installations in street-lighting systems. Special attention has been given these "community factors" as well as to safety and low maintenance by the National Tube Co., Frick Bldg., Pittsburgh 19, Pa. Write for the particulars.

Sirens for Air Raids

742 Federal Enterprises, Inc., 8756 S. State St., Chicago 19, Ill., has prepared Bulletin 95 which reports on its sirens used for air raids, fire, sabotage and other emergencies. The manufacturer states that it selected the vertical design for its equipment because the vertical rotating parts provide natural balance with minimum friction and bearing wear. The vertical siren, available from 2 to 7½ hp, radiates its voice horizontally over 350° where it is most effective.

Force-Feed Loader For Snow Removal

743 Athey Products Corp., 5631 W. 65th St., Chicago 38, Ill., in its new literature, states that its force-feed loader with exclusive Full-Floating feeder is the secret to better and faster snow loading. The machine follows the motor-grader or plow and loads bladed snow into trucks. Windrows up to 3 feet high can be loaded at rates up to 10 cubic yards per minute. Among its features are adjustable discharge height from 9 feet 3 inches to 10 feet and 6 inches; ability to load under overpasses as low as 10 feet, 6 inches, and hydraulic controls for all operating adjustments.

Water Gate Valve

744 A complete line of water-works valves, in sizes from 2 to 60 inches, is produced by The Kennedy Valve Mfg. Co., Elmira, N. Y. Bulletin 106 describes the A.W.W.A. gate valves which are job-fitted for a wide range of water-works requirements. Every valve is specially designed and engineered for its particular job. Available are non-rising stem and outside-screw-and-yoke types with a wide variety of gearing arrangements, controls, accessories, and end connections.

Compressor Gives Continuous Heavy-Duty 24-Hour Service

745 Schramm, Inc., West Chester, Pa., manufacturer of portable and stationary air compressors, on request will send literature describing its new model 210 Schramm Unistage compressor designed for continuous heavy-duty 24-hour service. It gives an actual air delivery of 210 cubic feet per minute. The manufacturer reports that 90% of the six-cylinder engine parts are interchangeable with the compressor.

Aerial Maps

746 Fairchild Aerial Surveys, Inc., 224 E. 11th St., Los Angeles 15, Calif., or 21-21 41st Ave., Long Island City, N. Y., has prepared a free booklet, *Focusing on Facts*, which describes its method of providing a precise photomap and accurate contour maps. The company points out that the two-way aerial maps provide one for planning and the other for engineering, so that city engineers can make decisions without sending a survey party into the field.

Your Fence— — How to Choose It

747 Cyclone fence protects property and equipment; it provides complete entrance and exit control that forces everyone to enter and leave at designated places. It is made from heavy, special-analysis steel wire. Hot-dip galvanizing takes place after the weaving process has been completed. Barbed wire is locked into notches in the Cyclone extension arm by a key inserted at the end. Among other features are ball-and-socket hinge, spring expansion joint, and sturdy H-column line posts. For further details, write to the Cyclone Fence Division, American Steel and Wire Co., P. O. Box 260, Waukegan, Ill.

Step Up Water-Well Yield

748 If the water level in your city's wells begins to drop, this doesn't always mean that the groundwater supply is exhausted. Often it means only that the well screen and aquifer have been corroded because of the chemicals in the water, and Dowell's acidizing treatment will make the capacity of the well as good as new. To learn about details of the acidizing process, write to Dowell, Inc., Tulsa 3, Okla., and describe your particular problem.

Emergency Truck Service

749 A cooperative plan to keep White trucks and busses in good working condition during the national emergency is discussed in a leaflet, *White Emergency Service Corps.* Published by The White Motor Co., 842 E. 79th St., Cleveland, Ohio, the publication lists a 10-point program discussing a nation-wide service requirement analysis to enlist every White owner for emergency registration of White equipment now in service, bulletins on latest maintenance methods, reports on parts availability, and a complete repair service.

Soil Stabilization Methods

750 The new 1951 edition of *Soil Stabilization Methods* is now available from Seaman Motors, Inc., 292 N. 25th St., Milwaukee 3, Wis. Bulletin 25 contains pictures, diagrams, and practical construction information. The company produces the self-propelled complete mixing unit which offers full 360-degree operator visibility and accurate control of the mix. The Seaman Trav-L-Plant is equipped with a tachometer assembly and a volumetric meter.

Parking Meter Has Visual Trouble Signal

751 A visual trouble signal and coin gate block are two features of the Park-O-Meter, produced by the Magee-Hale Park-O-Meter Co., Commerce Exchange Bldg., Oklahoma City 2, Okla. When the machine is jammed or becomes inoperative, the red line shows through coin windows. When it is not in working condition, the coin gate is automatically locked and the motorist cannot insert a coin. The company will supply literature that describes the meter in detail.

Water Meters

752 The Hersey Mfg. Co. of S. Boston, Mass., will supply literature on its water meters which give efficient performance, accurate registration, and require low maintenance cost. Its compound meter is available with all-bronze cases in sizes ranging from 2 to 6 inches.

Emergency Electric Units For Civil Defense Use

753 Onan emergency electric plants for civil defense are produced by D. W. Onan & Sons, Inc., 7642 University Ave., Minneapolis, Minn. They can be mounted on truck or trailer, or carried in the trunk of a car to any point where power and light are needed. Portable, mobile, or stationary models are obtained from 400 to 35,000 watts with a.c. or d.c. current.

For Water Coagulation

754 Ferric salts coagulate water of widely varying turbidity. The use of Ferri-Floc simplifies the treatment of high turbidity which spring rains create. Ferri-Floc is a hydrated Ferric sulphate that is able to clarify water of high turbidities without radical dosage changes. Further information will be sent by the Tennessee Corp., Atlanta 1, Ga.

Fences Protect Public Property

755 Fences to protect public property are obtained from the Stewart Iron Works Co., Inc., 1821 Stewart Block, Cincinnati 1, Ohio. They are made in chain link wire or iron in many styles, weights, and heights. Among other equipment are settees, wire mesh partitions, iron railings, steel folding gates, and steel flagpoles.

Sidewalk Sand Spreader

756 The Swensen sidewalk sand spreader will solve your ice control problems on sidewalks and drives, reports the Swensen Spreader & Mfg. Co., Lindenwood, Ill. A circular describing the machine with a 1-yard hopper may be obtained from the company, which states that this equipment employs a new fast way to cover icy walks with sand, cinders, or salt. The manufacturer announces that the same equipment also can be used to apply aggregate when seal-coating streets.

Maintenance Problems On Crawler Tractors?

757 If so, the Caterpillar Tractor Co. of Peoria 8, Ill., advises that you take your problems to Caterpillar dealers before parts are worn beyond repair. The manufacturer reports that its sales-and-service establishments have increased since World War II and that its dealers have developed new techniques for restoring and extending the life of its products. Many worn or damaged parts can be rebuilt which formerly required completely new replacement. The company produces diesel engines, tractors, motor graders, and earthmoving equipment.

104 and 78 Hp Motor Graders

758 A 24 page catalog presenting Allis Chalmers AD-4, 104-hp and AD-3, 78-hp motor graders has been released by the company's Tractor Division. Copies are available from the Allis-Chalmers Mfg. Co., Tractor Division, Box 512, Milwaukee 1, Wis. Action pictures illustrate the advantages and usefulness of this large equipment. Attention is given to the rigid design of this line of motor graders. Cutaway views provide close-up inspection of the power supply, transmission, and final drive.

Locates Water Leaks Without Digging

759 The Geophone locates leaks without digging. By sound it detects the exact location of leaks in water or steam pipes. Operating on the principle of the seismograph, the Globe Geophone saves the costly expense of extensive surveys, excavating, and replacing. The complete Geophone outfit consists of connecting tubes, two Geophone discs, headpiece, and heavy leather-covered carrying case with shoulder strap, and is priced at $65. Full details may be obtained from the Globe Phone Mfg. Co., Reading, Mass.

(Please Turn to Page 29 for More Literature)

The Most Accurate Yardstick for Measuring the Dependability of a Parking Meter

is its ON-THE-STREET Performance Record!

Sure—laboratory tests are important. But for accurate proof of a meter's dependability, nothing compares to the on-the-street performance records—not for a year or two, but from five- to ten-year stretches. There you have the real test of a meter's worth, a true picture of what you can expect through the years.

MI-CO's have an enviable record for low upkeep costs and consistently high earnings over long periods of time. One reason: *There just isn't any complicated mechanism in a MI-CO meter to break down.* And this fact, coupled with unusually sturdy construction, accounts for MI-CO's ability to give low-cost, dependable service far beyond that of most meters.

Another important consideration is ease of servicing. Should a MI-CO need attention, simply unlock the meter, remove two screws, and make the adjustment. The difficulty is usually confined to two or three places, all easily accessible, and the meter is back in operation in a matter of minutes.

If you are considering the adoption of metered parking, it will pay you to contact MI-CO. Upon request we'll be glad to submit on-the-street records of hundreds of installations, some ten years old, and other important data.

MI-CO METERS, 231 Court St., Covington, Ky.

Division of The Michaels Art Bronze Co., Inc.

LOCK JOINT CONCRETE PRESSURE PIPE

The Choice of Five Capitals

WASHINGTON, D.C. • U.S.A.

WASHINGTON, D. C. • RIO DE JANEIRO
BOGOTA • CARACAS • CIUDAD TRUJILLO

Five capital cities under five different flags, but with one important factor in common . . . they all have major water supply lines built of Lock Joint Concrete Pressure Pipe.

* * *

This unanimity of choice can be attributed to the sound design, high quality of materials and excellent workmanship which goes into the production of Lock Joint Concrete Pressure Pipe. The ample steel reinforcing provides a rugged pipe which will withstand both high internal pressures and unusually heavy overburdens. Walls of carefully proportioned concrete prevent corrosion or tuberculation assuring durability and permanently high carrying capacity. Flexible expansion joints at every joint provide easy installation and assure permanent water tightness under all conditions of service.

* * *

The test of time has proven Lock Joint Concrete Pressure Pipe lines to be extremely economical to operate, requiring practically no maintenance or repairs throughout an estimated useful life of more than 100 years. Yet the pipe is amazingly low in initial cost.

* * *

For your next water transmission line involving pipe 16" in diameter or larger, specify Lock Joint, the capital pipe chosen by capital cities because of its durability, dependability and economy.

BOGOTA • COLOMBIA

CARACAS • VENEZUELA

CIUDAD TRUJILLO
DOMINICAN REPUBLIC

RIO DE JANEIRO
BRAZIL

SCOPE OF SERVICES—Lock Joint Pipe Company specializes in the manufacture and installation of Reinforced Concrete Pressure Pipe for Water Supply Distribution Mains in a wide range of diameters as well as Concrete Pipes of all types for Sanitary Sewers, Storm Drains, Culverts and Subaqueous Lines.

LOCK JOINT PIPE COMPANY
Est. 1905
P. O. Box 269, East Orange, N. J.

PRESSURE PIPE PLANTS: Wharton, N. J., Turner, Kan., Detroit, Mich.

BRANCH OFFICES: Casper, Wyo. • Cheyenne, Wyo. • Denver, Col. • Kansas City, Mo. • Valley Park, Mo. • Chicago, Ill. • Rock Island, Ill. • Wichita, Kan. Kenilworth, N. J. • Hartford, Conn. • Tucumcari, N. Mex. • Oklahoma City, Okla. • Tulsa, Okla. • Beloit, Wis. • Hato Rey, P. R.

LOCK JOINT
Reinforced
PRESSURE PIPE

Which Catalogs Interest You?

Write directly to the manufacturers, or use the coupon on page 23

Drainage Bulletins

760 Armco Drainage & Metal Products, Inc., Middletown, Ohio, recently released several publications on its various products. Available are: *How to Stop Excessive Maintenance at the Source*, on Armco subdrainage systems; *Help Prevent Sewer Failures Before They Happen*, on Armco corrugated metal sewer structures; *Armco Corrugated Metal Pipe—A Type for Every Need*, and a 46-page manual on the installation of its products.

Pipe and Fittings From 2 to 84 Inches

761 Warren cast iron pipe and fittings can be supplied in all sizes 2 to 84 inches with all types of joints and in accordance with standard specifications. The Warren Foundry & Pipe Corp., 55 Liberty St., New York 5, N. Y., produces bell-and-spigot pipe, flange pipe, mechanical joint, flexible joint pipe, and short body bell-and-spigot specials.

Lawn Mower Sharpener

762 Bulletin No. 25B issued by the Modern Mfg. Co., 160 N. Fair Oaks Ave., Pasadena 1, Calif., reports on the Modern lawn mower sharpener which cuts maintenance costs and means lower capital investment. Priced at $241.50, less motor, it sharpens all reel-type mowers from 5-inch edgers to 36-inch power mowers. Obtainable with the sharpeners are 1/3-hp GE 60-cycle motors for $21.50 extra.

Tools for Threading And Cutting Pipe

763 A new catalog may be obtained from The Toledo Pipe Threading Machine Co., 1445 Summit Ave., Toledo, Ohio, describing its line of tools for threading and cutting pipe. Included are hand tools, all pipe sizes, ¼ to 12-inch and ¼ to 1-inch bolts, and power pipe machines up to 2 and 4-inch capacity. According to the manufacturer, its equipment cuts smooth and accurate threads with ease.

Highway Markers

764 Highway markers made by the Prismo Safety Corp., Huntington, Pa., include Prismo spheres that are crystal clear, glass globes of optical perfection. The Prismo binder is engineered to impart a background of brilliance to the myriads of bright rays reflected from the Prismo spheres.

Diesel Engine Repairs, Maintenance

765 *The Story of Engine Repair and Maintenance* is the title of a booklet prepared by Exline Diesel Engine Works, E. Country Club Road, Salina, Kans. It describes the company's new shop which is equipped with large grinders, lathes, milling machines, crankshaft lathes, and electric acetylene welding, babbitting, and metallizing equipment that makes it particularly well equipped to handle quickly all types of diesel engine repair.

For Water, Sewage Plants

766 Bulletin 600-H2 on controllers is available on request from Builders-Providence, Inc., 358 Harris Ave., Providence 1, R. I. It reports on the company's hydraulically powered controllers Models RCA and RCB for water and sewage plants. Among the features listed for the equipment are high-control accuracy, ease of adjustment, low head loss, and automatic control.

Waste Receptacles

767 All-metal, newly designed waste receptacles are offered by the Atlas Products Co., 3825 S. Racine Ave., Chicago 9, Ill. The models, available in green and white, have non-binding, full-length hinges on the door springs made of tempered spring steel for lifetime wear; for additional sanitation and fireproof feature, the doors remain closed when not in use, even when placed on unlevel floor.

Dual-Fuel Engine

768 The Superior Dual-Fuel engine can switch from oil to gas or back to oil, depending on which fuel is available or more economical. Municipalities wishing to save on fuel bills will find the answer by employing this equipment manufactured by The National Supply Co., Engine Division, Springfield, Ohio. Write for bulletins describing Superior and Atlas engines to meet your requirements in sizes up to 1,500 hp.

Accurate Traffic Control

769 Quick, accurate, and economical computation of traffic is provided by the traffic control Denominator available as a single unit Hand Tally type or as tabulators consisting of multiple registers to meet specific requirements. An accurate count of traffic flow is a basic factor in any traffic study. Complete details of this equipment will be sent by The Denominator Co., Inc., Dept. 1-TC, 261 Broadway, New York 7, N. Y., manufacturer of tabulating machines for over 35 years.

Kills Weed Roots

770 The Dolge SS weed-killer penetrates down to the plant roots and kills them; sterilizes the soil, preventing normal sprouting of wind-blown seeds, and its chemical method of weeding eliminates physical toil and saves cost of labor. Manufactured by the C. B. Dolge Co., Westport, Conn., this agent is employed for parking places, walks, tennis courts and other areas where no vegetation is desired. The E.W.T. selective weed-killer (2-4-D) controls weeds on fairways. It does not injure most turf grasses, but works its way down into the roots of brush, poison ivy, ragweed, and other obnoxious plants.

Latest Facts About Mercury-Vapor Street Lighting

771 A report of May 1, 1951, listed mercury-vapor street-lighting installations in 359 municipalities. This indicates the keen interest over the country in this excellent and economical illumination. These are installations of the OV-20 luminaire, of hinged construction for quick cleaning and relamping. Luminaire and mercury-vapor street lighting are described for practical understanding in Bulletin B-3876A available from the Westinghouse Electric Corp., Box 868, Pittsburgh 30, Pa.

Pumping Equipment

772 Economy Pumps, Inc., Division of the Hamilton-Thomas Corp., Hamilton, Ohio, has prepared several new bulletins on its pumping equipment. Among those discussed are: the single-stage, double-suction or horizontally split case centrifugal pumps in Catalog A-750, and sump pumps in the duplex, submerged, non-clog sewage type with totally enclosed motors and the single, submerged, general service and non-clog sump pump as listed in Catalog E-345. F-447 lists the horizontal non-clog sewage pumps; E-748, the general service sump pumps, and F-249, the vertical non-clog open shaft pumps.

Measures Water Turbity Quickly

773 A new catalog featuring the *Turbidimeter Without Standards* has just been published by Hellige, Inc. The instrument is designed for accurate measurements of water turbidity, sulfate determinations, measurements of suspended matter, and colloids in general. The Hellige Turbidimeter eliminates tedious preparation and renewal of standard suspensions, use of long cumbersome tubes, and the difficulty of making readings with extinction-type apparatus. Detailed descriptions of the working principle and of the instrument itself are contained in the new catalog, together with prices on calibrated and uncalibrated Turbidimeters. For your copy of Catalog No. 9000-A, write to Hellige, Inc., 3718 Northern Boulevard, Long Island City 1, N. Y.

Adjustable Valve Boxes

774 The Buffalo Pipe & Foundry Corp., Box 55, Station B, Buffalo 7, N. Y., will send a circular on its adjustable valve boxes and extension service boxes. Available are the 3-piece screw type valve box designed for modern street traffic, and the two-piece extra heavy sliding type designed to cover the stuffing box and to slide instead of rotate. Extension service boxes may be had with 2½-inch shaft and 3-inch shafts.

How to Tap Concrete Pressure Pipe

775 Yes, you can make a strong, perfect, watertight tap under pressure in a Lock Joint reinforced concrete cylinder pipe if you follow the company's directions. There will be no pipe damage or costly shut downs. Write to Lock Joint Pipe Co., P. O. Box 269, E. Orange, N. J., for complete details.

Earth-Boring Tool

776 A booklet is issued by the Hydrauger Corp., Ltd., 681 Market St., San Francisco, Calif., telling the advantages of its earth-boring tool which provides faster pipe laying without traffic interference. The device bores holes whose diameters vary from 2 to 24 inches. It can lay up to 225 feet or more per setting, depending on earth formation being bored.

Generating Set for Emergency Power

777 A Fairbanks-Morse generating set for quick power during emergencies provides for protection against loss of life, property damage, and lawsuits. Available in a capacity to meet your needs, the sets are employed by theaters, hospitals, institutions, schools, police, fire and other municipal departments. Further information will be sent by the Fairbanks, Morse & Co., Chicago 5, Ill.

Parking Meters

778 Mi-Co Meters parking meters have a minimum of moving parts and are built to stand severe usage. Manufactured by Mi-Co Meters, 231 Court St., Covington, Ky., Division of The Michaels Art Bronze Co., Inc., the equipment is simple to operate, gives a long life of service, and is low in maintenance cost.

For Tapping Water Pipes

779 For inserting all standard makes of corporation stops, the Model B tapping machine, produced by the Haya Mfg. Co., Erie, Pa., is fast, easy to handle, and efficient. The head turns freely at all pressures and two ratchet wrenches speed operations. Designed for the man in the ditch, the machine provides more room, and is fully loaded and ready for operation before placing on the main.

Wheel and Crawler Tractors

780 A complete line of industrial wheel and crawler tractors is offered by The Oliver Corp., Industrial Division, 19300 Euclid Ave., Cleveland 17, Ohio. These include the gas model No. 66 with 27 hp., No. 77 with 39 hp and the OC-3, 22 hp gas. Gas or diesel include Model 88 with 45 hp, B with 38 hp, A, 30.5 hp and Model FDE with 110 hp diesel.

Portable Warning Lights

781 Thoro Flare portable neon warning lights are described in new literature issued by the Emarco Corp., Far Hills Station, Dayton 9, Ohio. The equipment needs no matches or switches. It starts flashing underwater or at 20 below zero. The red neon tube, also available in other colors, is rubber-mounted and shock-proof. Lens and lid are sealed against dust and moisture.

(See page 30 for more bulletins)

Ask the men who wear them . . .

Your policemen and firemen.

Ask the men who buy them . . .

Your municipal purchasing agent.

Ask the men who sell them . . .

Your BLACKINTON badge supplier.

. . they will all say

BLACKINTON

is the finest in Badge Quality!

These men know badges . . . ask any one of them and they will tell you, there is more to a badge than meets the eye.

Don't take a chance — your municipality cannot afford to accept a lesser quality. Specify BLACKINTON when ordering badges.

Remember, Blackinton has been manufacturing badges and insignia for 99 years — that's proof enough.

BLACKINTON

V. H. BLACKINTON & CO., INC., ATTLEBORO FALLS, MASS.

BADGES *for Police, Fire, Town, City, County and State Officials; also Civilian Defense, Plant Protection, and Junior Police.*

Other Catalogs

Write directly to the manufacturers, or use coupon on page 23

Air Compressor

782 Lower first cost and lower upkeep are claimed for the Smith Model 105-P air compressor manufactured by the Gordon Smith & Co., Inc., 425 College St., Bowling Green, Ky. The machine delivers 105 cubic feet per minute, is powered with the Chrysler 15 Industrial engine, and has sodium cooled valves among its features.

Pipe Serves 100 Years

783 The United States Pipe and Foundry Co., Burlington, N. J., which makes cast iron pipe for water, gas, sewerage, and industrial service, reports that Hartford, Conn., has a cast iron gas main in service that was installed more than a century ago. Recently, a section of the main was uncovered and found to be in excellent condition, despite the fact that it serves under the pavement of one of the city's heaviest traffic streets.

Standard Traffic Sign

784 The Grace Sign and Mfg. Co. of St. Louis 3, Mo., has introduced a new and cheaper standard traffic sign so conetructed that it will slip over a standard steel road sign using the steel plate of the original sign as a backboard. Called the Ez-On, the device's advantages are its availability, low cost, reflectivity, durability, and simplicity of installation.

Lighting Fixture Hangers For Safe Maintenance

785 Thompson hangers mean low cost and safe maintenance. These disconnecting and lowering lighting fixture hangers facilitate quick, economical servicing of overhead lights by lowering them to ground level. All climbing and electrical hazards for maintenance men are eliminated. The equipment can be employed with all types of outdoor and indoor high-level lights and is recommended for use with street lighting in small communities, in amusement or recreation areas, athletic fields, parking lots, swimming pools, and beaches. For a copy of Catalog No. 50, write to the Municipal Lighting Dept., The Thompson Electric Co., 1111 Power Ave., Cleveland 14, Ohio.

Earth-Moving Machines

786 The complete Heil earth-moving line is described in new bulletins published by The Heil Co., Dept. 4371, 3043 W. Montana St., Milwaukee 1, Wis. The manufacturer states that its equipment saves earth-moving time and money. Among the machines described are the Heiliner scrapers, cable-operated dozers and trailbuilders, conversion hoists, bottom dump wagons, power control units for all tractors, open-top scrapers, light and hydraulic bulldozers, and trailbuilders.

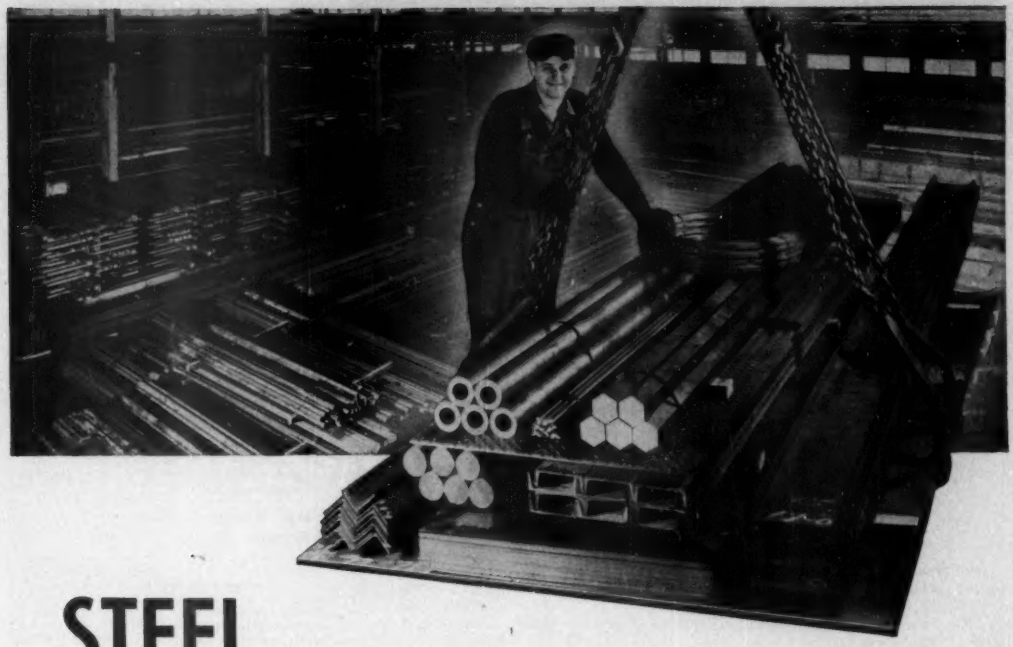
Vacuum Leaf Loader

787 Those trees that shade us from the summer sun create the problem of leaf-cluttered streets when autumn comes. Officials with an eye to the next season may find the solution to their clean-up problems by employing the American vacuum leaf loader. According to the Leaf Loader Division, American Structural Steel and Tank Co., 21050 W. 8 Mile Road, Detroit 19, Mich., the machine does its work faster, cleaner, and at a low operating cost.

Pipe-Fitting Problems Solved

788 This folder, distributed by Beaver Pipe Tools, 333 Dana Ave., Warren, Ohio, gives practical advice on the way to use pipe-fitting equipment correctly. It gives help on threading, cutting, reaming, chucking, and electrical power data. In addition, the company will supply its complete Beaver catalog of pipe machines, if requested.

(See page 32 for more bulletins)



STEEL...

for Many Municipal Needs

Shipped Quickly from Ryerson Stocks

Call Ryerson for the steel you need and you'll find we're always on the job.

Every day, cities and towns from coast to coast are being expertly served by the network of thirteen great Ryerson plants. Each plant has many kinds, shapes and sizes in stock. Each is equipped to accurately cut or otherwise prepare your steel to exact specifications. Ryerson specialists, whose recommendations are backed by more than a century of practical experience, will gladly assist you on any problem of application or fabrication.

Because of the national emergency, steel shortages are inevitable. But it is possible that many of your requirements may be among the carbon, stainless and alloy steels we have on hand for quick shipment. So for any kind of steel—anytime—contact your nearby Ryerson plant. You can be sure we'll do our level best to take care of you.

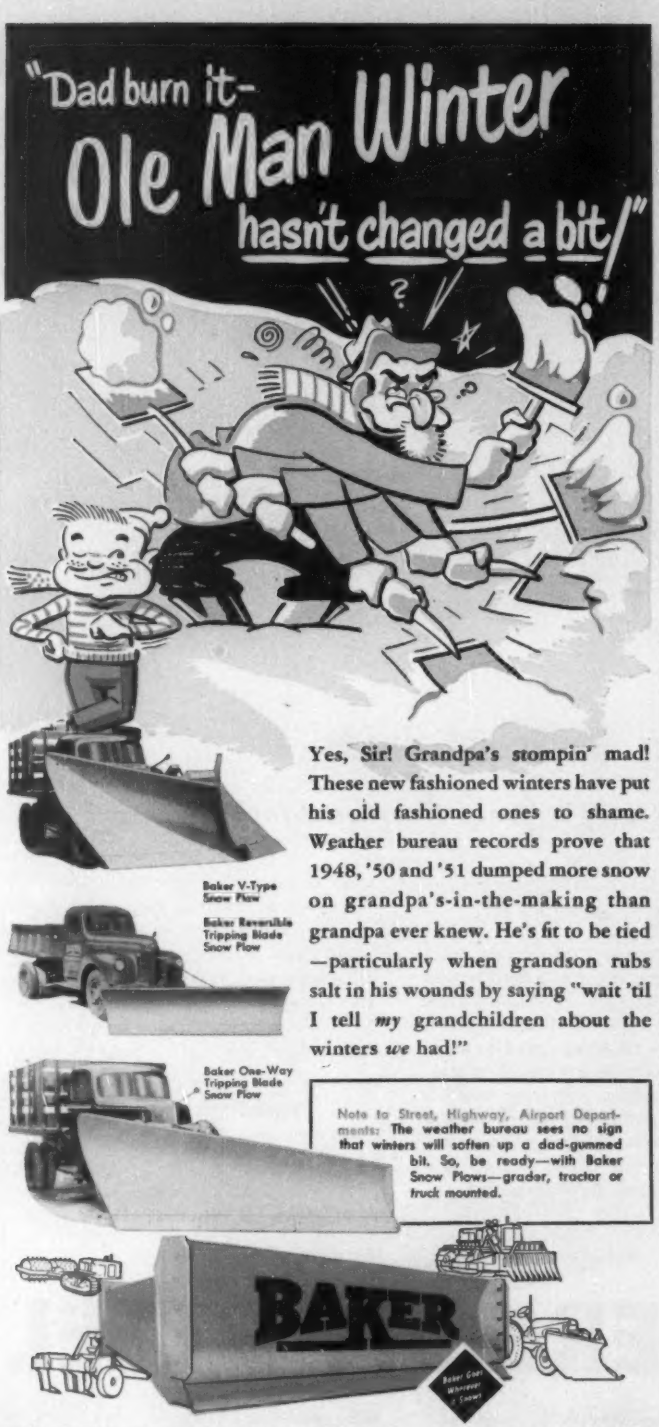
PRINCIPAL PRODUCTS

BARS—Carbon & alloy, hot rolled & cold finished.
SHAFTING—Cold fin., ground & polished, etc.
STRUCTURALS — Channels, angles, beams, etc.
TUBING—Seamless & welded mechanical & boiler tubes.
STAINLESS — Allegheny plates, sheets, etc.
PLATES—Many kinds, incl. Inland 4-Way Floor Plate.
SHEETS—Hot & cold rolled, many types.
MACHINERY & TOOLS—For metal fabrication.

RYERSON CERTIFIED STEELS

RYERSON STEEL

JOSEPH T. RYERSON & SON, INC. PLANTS AT: NEW YORK • BOSTON • PHILADELPHIA • CINCINNATI • CLEVELAND
DETROIT • PITTSBURGH • BUFFALO • CHICAGO • MILWAUKEE • ST. LOUIS • LOS ANGELES • SAN FRANCISCO



Yes, Sir! Grandpa's stompin' mad! These new fashioned winters have put his old fashioned ones to shame. Weather bureau records prove that 1948, '50 and '51 dumped more snow on grandpa's-in-the-making than grandpa ever knew. He's fit to be tied —particularly when grandson rubs salt in his wounds by saying "wait 'til I tell *my* grandchildren about the winters *we* had!"

Note to Street, Highway, Airport Departments: The weather bureau sees no sign that winters will soften up a dad-gummed bit. So, be ready—with Baker Snow Plows—grader, tractor or truck mounted.

THE BAKER MANUFACTURING COMPANY • SPRINGFIELD, ILLINOIS

Catalogs for You

Write directly to the manufacturers, or use coupon on page 23

For Better Sewage Treatment

789 If improved sewage treatment is a problem in your city, you will get real help by requesting literature from Infilco, Inc., Tucson, Ariz. This will tell how to increase trickling filter efficiency, raise the clarifier capacity without increasing its size, reduce psychoda-fly nuisances and other difficulties.

Street-Lighting Standards

790 Descriptive literature on its lighting equipment for streets, airports, and other uses will be furnished by the Revere Electric Mfg. Co., 6015 Broadway, Chicago 40, Ill. Among the products available are Revere hinged street lighting standards, single and double arm one-piece octagonal steel standards, luminaires, regulators, transformers, and controls.

Ball-Bearing Hydrant

791 The ball bearing action of the Darling B-50-B hydrant easily cuts operating torque a full 50%. According to the Darling Valve & Mfg. Co., Williamsport 10, Pa., this packless, dry-top hydrant provides smooth and easy operation. Bulletin No. 5007 describes the equipment in detail.

Stop Water Seepage Through Masonry Walls

792 Stonhard Stontite effectively and economically solves water-seepage problems. It overcomes such conditions as mildew and water damage to materials stored in basements, rusting of equipment or machinery, and loss of water supply. This agent seals the tiny surface pores present in untreated concrete and effectively retards penetration and damage by food acids, oils, greases, and excessive water. Further information will be supplied by the Stonhard Co., 1306 Spring Garden Street, Philadelphia 23, Pa.

Seals Water Meters And Parking Meters

793 Any type of lead or wire seals for all municipal and water-works uses may be obtained from The United Seal Co., 460 S. Pearl St., Columbus 15, Ohio. They are employed for water meters, electric and parking meters, boxes, drums, trunk cars, fire extinguishers, cash boxes, governors, and carburetors. Wire may be had in copper, galvanized, and steel, either cut to standard lengths or in spools, or coils, single crimped 2, 3 and 4 ply in most gauges. The manufacturer also carries a line of seal presses.

Pipe Screws Together

794 The McWane threaded 2 and 2¼-inch cast iron pipe screws together. According to the McWane Cast Iron Pipe Co., Birmingham 2, Ala., one man alone can easily screw 18-foot sections together above the ground. For extra strength, the joint is oversize 2½-inch male-and-female threaded.

Sewer Cleaning

795 The O'Brien Root Master makes sewer cleaning easier, faster, and safer according to the O'Brien Mfg. Co., 5662 N. Northwest Highway, Chicago 30, Ill. It cleans lateral lines 3 to 10 inches in diameter. The OB cable saver, welded all-steel ventilated cable cage, and hand truck design make it a safe, economical, lightweight machine which can be handled by one man. It restores the normal flow to sewers without digging up streets and lawns.

Modern City Codes

796 Modern city codes are offered by the Michie City Publications Co., Charlottesville, Va. The company codifies, edits, and indexes city ordinances and brings them up to date. It reports that without obligation its editors "will visit your city to check your ordinances and then submit a concrete proposal for preparing your new city code."

(See page 34 for more bulletins)

NEW..SENSATIONAL

MODEL A1

Automaton

FIRST . . . FINEST AND ONLY ONE-MOTION AUTOMATIC METER

OUT-VALUES AND OUT-PERFORMS OLD-STYLE "AUTOMATICS"

IN TOUCH ACTION

Feel how extra easy, velvet smooth it works. Fingertip action. Many times easier to press in coin. So effortless a 5-year old child can operate.

IN COMPLETE AUTOMATIC OPERATION

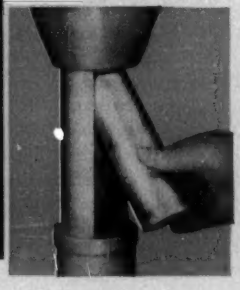
Only ONE motion required to actuate the AUTOMATON (Old style automatics require 1st, costly windup of power spring by city, then 2nd, insertion of coin by motorist). Cycle-tone SIGNAL bell inside of mechanism lets you know when meter is completely energized.

IN SLUG DETECTION and EJECTION

Only meter that "does something about it" when chisler tries to use washer. Automatically kicks out washer or slug with hole in center when finger is lifted from coin.

SAFEST COLLECTION SYSTEM EVER DEVISED

More than tamper-proof and theft-proof at meter location. Patented system absolutely protects revenues until sealed coin box is emptied thru trap-door into locked collection cart. Collector cannot touch revenues.



TRUE! Not by claim but by performance, Automaton's improved design continues to prove itself by millions of operations. The simplest, truly automatic parking meter ever invented.

DIFFERENT! Advance design, positive action, and more modern features, than any other meter.

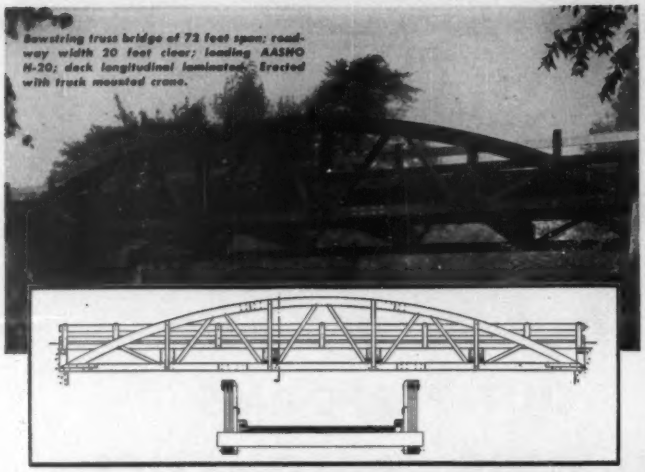
SELF-WINDING! Automaton winds itself every time a coin is inserted. No handle to turn by the parker, no power spring to keep wound at the city's expense.

EXCLUSIVE! Features like those above, plus a score more, such as: screw-on turret top, tamper-proof hinge-free coin door, rate plates protected under lock and key, lift-out one-unit mechanism, reversible calibration plates, and all the desirable and necessary functional features essential to city and public acceptance.

When you're ready to modernize your metered parking, by all means buy none, till you've seen the new AUTOMATON. Write for demonstration.

835 NORTH WOOD ST. **DUNCAN PARKING METER CORP.** CHICAGO 22, ILL.

Manufacturers of AUTOMATON fully automatic and MILLER manual parking meters.



Bowstring truss bridge of 72 feet span; roadway width 20 feet clear; loading AASHO H-20; deck longitudinal laminated. Erected with truck mounted crane.

Permanent, Economical Bridges

through engineered timber construction

This timber bowstring bridge tells a powerful story of how to get economical adequate bridges that will give long-time service without costly maintenance.

Top and bottom chords are glued laminated timbers composed of kiln dried material permanently "welded" together under pressure by glues which are stronger than the wood itself. These members are dimensionally stable, and will not shrink, twist, check or warp.

All parts of the bridge are precision fabricated, preservatively treated and delivered to the jobsite ready for fast, easy assembly and erection.

Readily available at Timber Structures, Inc. are all types of timber bridges, including arches, bowstring truss, parallel chord truss, girder, and timber-concrete composite deck. Engineering facilities are available, when desired, to supplement those of your staff or to undertake the engineering work involved in the bridge design.

Basic bridge types of Timber Structures, Inc. are illustrated in brochure, "Permanent Timber Bridges". Get your copy from your nearest Timber Structures office, or fill in and mail the coupon.

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Free Catalogs

Write directly to the manufacturers, or use coupon on page 23

Meaures Water And Sewage

797 Venturi tubes for measuring cold water, raw sewage, trade waste, sludge, air, and gases, are made by the Simplex Valve and Meter Co. They are available in many sizes and different designs, among which are the steel plate tube with cast iron throat section; cast iron venturi tube with hand holes and clean valves at main and throat sections, and the cast steel or cast iron venturi for hot or cold water. When writing for information, address your query to the Simplex Valve & Meter Co., Dept. 7, 6709 Upland St., Philadelphia 42, Pa.

Water Service Pipe

798 *Water Pipe Sizes* for plumbing fixtures, branches, risers, and mains, is the title of a new booklet prepared by the Bridgeport Brass Co., Bridgeport 2, Conn., which will be sent free of charge on request. Among its contents on sizes of red brass pipe and copper water tube are rules for determining pipe sizes, water supply formulae, classification of drinking waters, facts about copper water tube, and gas mains and branches, and fuel oil lines.

Street-Marking Signs

799 The Miro-Flex Co., Inc., 1624 E. 2nd St., Wichita, Kans., manufactures signs for industrial, highway, or municipal use. The street-marking signs are deeply and uniformly embossed on zinc-coated, bonderized steel and also are available with glass or lucite buttons.

Water Supply Pumps

800 Deming water-lubricated turbine pumps can use any type of power, enabling them to utilize standby power, if necessary. The pumps also feature water lubrication and adjustable time impeller clearance. Write to the Deming Co., Salem, Ohio, for literature describing the equipment as well as the pamphlet on planning a water system.

For Street Lighting

801 Good street lighting reduces accidents and crime after dark, and improves appearance and property value. On request, the Joslyn Mfg. and Supply Co., 20 N. Wacker Drive, Chicago 6, Ill., will send literature describing its complete pole line equipment, luminaires, and lumen incandescent lamps.

Water Purification

802 Catalog 61 issued by the Fischer & Porter Co., Dept. IT-3J, Hatboro, Pa., describes the F & P Rato-Chlor chlorine dispenser which can be employed for swimming pool water and drinking water purification, sewage treatment, chlorine processes, and algae control. Types available are direct reading flow rate indicating meter, manual semi-automatic, automatic or proportional control, and recording and/or totalizing optional.

Aerial Power Saw Carrier

803 Descriptive literature on its aerial power saw carrier will be furnished by the manufacturer, the LeRoy Machine Co., Inc., LeRoy, N. Y. The machine hoists the saw and supports its weight. It can be used with equal safety either aloft a tree or working from the ground. The saw makes flush cuts without splintering or tearing the bark. It speeds tree trimming, topping, or completely taking down a tree.

Fire Escape Ladder

804 The modern protection against loss of life by fire is the Superior fire escape ladder of lightweight all-metal construction. It can be stored in a compact container ready for instant use in any emergency. Full details will be sent by the Superior Fire Equipment Corp., 190 Broadway, New York 7, N. Y.

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MACK AERIAL at GRAND RAPIDS

Among the many dates on your calendar for the I.A.F.C. Conference at Grand Rapids, be sure to make one to see the Mack Aerial on display.

Only by viewing it can you fully realize the strength and fine finish of the rugged Mack chassis. Only through personal observation can you judge the accessibility of its controls, ground ladders and equipment. Only by first-hand examination can you appreciate its potentials for smooth, fast performance—its one-man, jam-proof, all-hydraulic controls—its safety, flexibility and compactness.

No doubt about it—there's nothing like the modern Mack Aerial for advanced design, construction and performance. So see it at the convention—or make a date with your Mack representative to get all the details soon. And just remember, too, that no matter what type or model Mack you put into service, you'll be triply rewarded—not only by the kind of *performance* you get, but by the degree of apparatus *reliability* and *durability* as well. That's why, these days more than ever, it's wise to modernize with Macks.

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The average pipe yard has some or all of the following sources of scrap metal, according to whether pipe is used for water, gas, sewerage or industrial service:

Obsolete fittings; cut pipe (short pieces of distribution or service pipe); damaged hydrants, valve boxes, manhole covers, etc. It all adds up to a vital contribution to defense production.

Collect your scrap now. Phone your nearest scrap dealer. He wants what you have *but quick*, and pays good cash prices.

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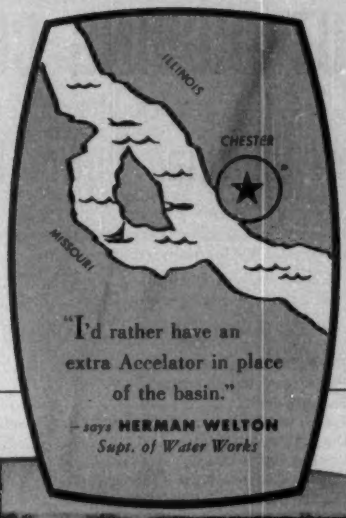
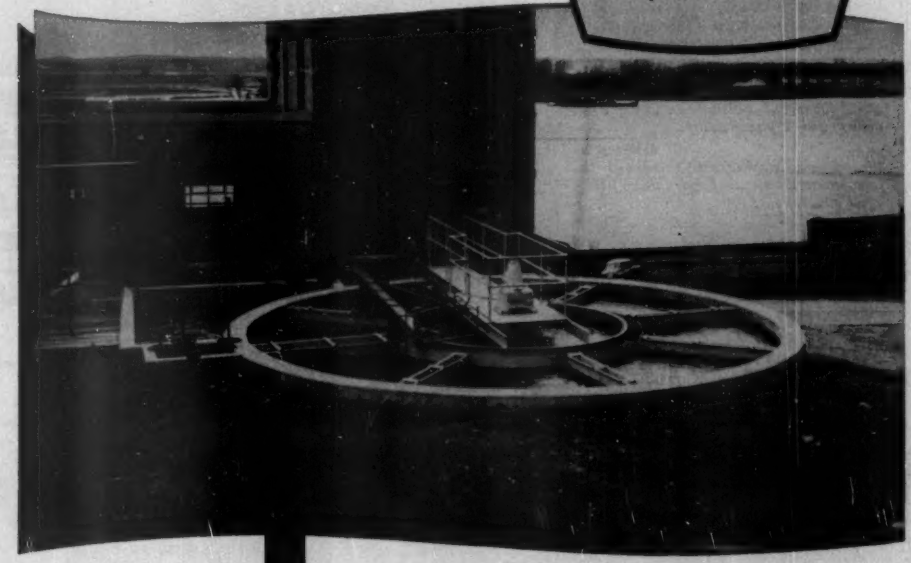
with the **Accelator®**

Chester, Illinois, no longer needs

2-hour presedimentation basin...



"I'd rather have an extra Accelator in place of the basin."
– says **HERMAN WELTON**
Supt. of Water Works



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with exclusive slurry recirculation
SAVE UP TO 80%
in space (with lower construction costs)
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This Infilco plant at Chester, Illinois, handles 2,000,000 g.p.d. of Mississippi River water ranging from 400 to 4000 p.p.m. turbidity. The Accelator produces an effluent of 2 to 12 p.p.m. and is so efficient that a 2-hour presedimentation basin is no longer needed and has been taken out of service.

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CUT DIGGING COSTS

with the

new Sherman Power Digger

Patented, actuated bucket gives you selective digging action, better loading, greater versatility.

All-hydraulic action—made possible by heavy-duty hydraulic cylinders—assures efficient performance.

SPECIFICATIONS

Shovel reach below ground surface	8 feet
Digger reach behind tractor	10 feet
Swinging arc	140°
Trench width, standard digging shovel, single cut	18 inches
Digging shovel capacity	3.5 cu. feet
Loading shovel capacity	5 cu. feet
Loading clearance, digging shovel, loaded	7 feet
Loading clearance, loading shovel	10 feet

Standard tractor mounting gives unmatched maneuverability and transportability.

•

Digs ditches, trenches, footings, culverts, basements and other excavations.

•

Handles roots, rocks, hard clay and oiled road surfaces.

Works well behind the tractor at any angle.

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Actuated bucket raises high enough to load standard dump truck.

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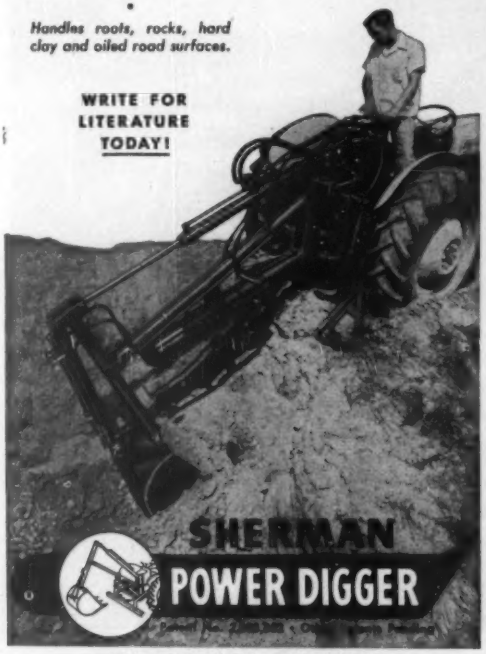

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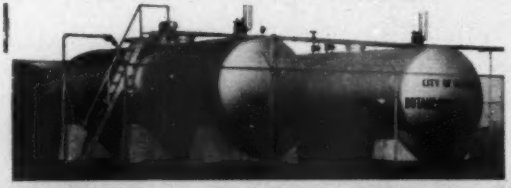

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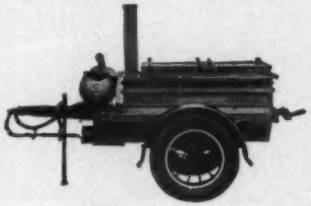
Connery's Style W Heating Kettle Made in 75, 110, 165 and 210 Gallons.



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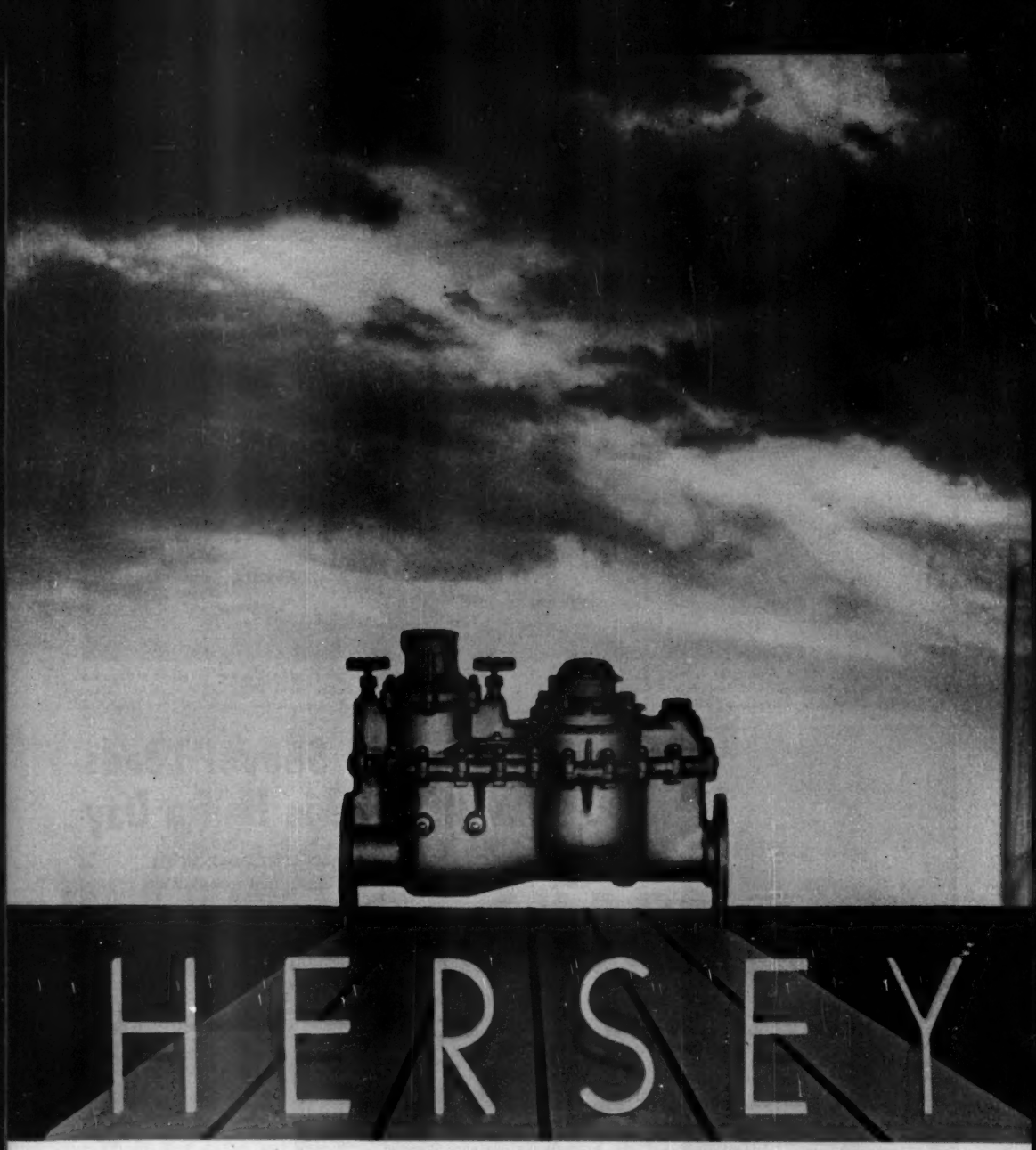

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All bronze case from 2" to 6"

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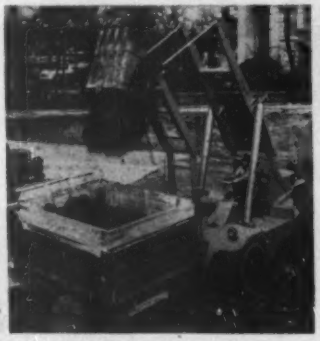
THE DEMPSTER-DIGGSTER, Type GRD, same as the one that loaded 600 tons of stone recently, has a 15 foot six inch turning radius, is 20 feet long when bucket is in traveling position, and bottom of bucket is nine feet three inches above ground when in extreme dumping position. It will dig 15 inches below grade and through a 15 foot bank. Note how bucket follows the slope of the material.



THIS DEMPSTER-DIGGSTER, Type HL, is specially equipped for high dumping. The bottom of the bucket is 13 feet six inches above ground. It will dig through an 18 foot bank.

FOR FAST, EFFICIENT operation in difficult terrain, the Dempster-Diggster is available with crawler-type traction.

Fast Automotive Shovel Loads 600 Tons of Stone in Half a Day

CONTRACTOR REPORTS: HYDRAULIC CROWD, HOIST UNIT "FILLS LONG NEEDED PLACE IN OUR INDUSTRY"

THE DEMPSTER-DIGGSTER, a revolutionary shovel loader, recently loaded 600 tons of broken stone in the first half day of operation. This outstanding performance was reported to Dempster Brothers, Inc. by W. E. Lambert, president of Lambert Brothers, Inc., one of the nation's largest crushed stone contracting firms.

"In connection with our extensive activities in several southern states," the contractor said, "we have used various types of power shovels and front end loaders. After seeing the easy operation of the hydraulically operated Diggster in a demonstration we had made alongside of a competing loader, we placed an order with you. We installed the Diggster equipped with a yard and half stockpile bucket on one of our operations in western North Carolina.

"Our records show," he continued, "that the unit loaded approximately 600 tons of broken stone in the first half day of operation. The Diggster has been working continuously and is giving perfect satisfaction. It is a pleasure for us to so advise you because in our opinion the Diggster fills a long needed place in our industry. We welcome you to bring any interested parties to our operation to see the Diggster in action."

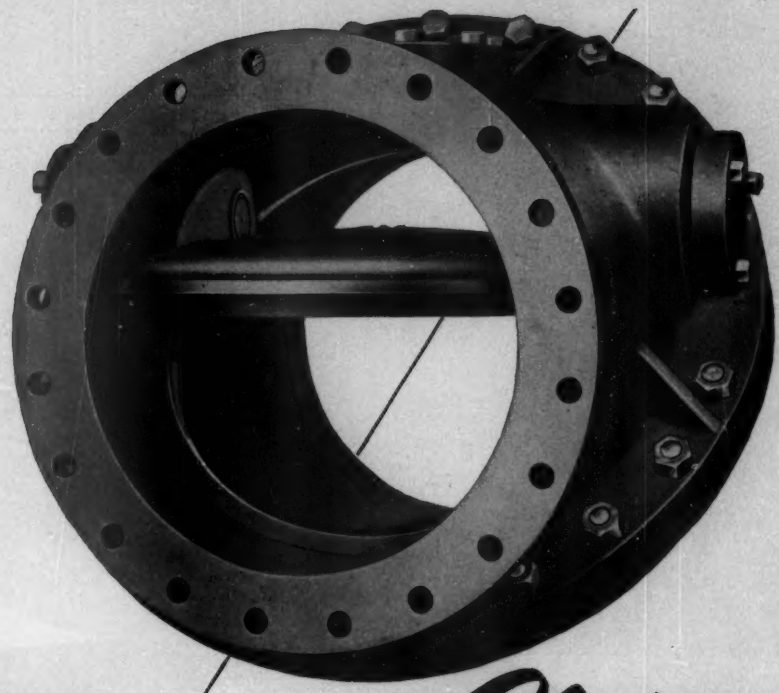
The tremendous speed of the Dempster-Diggster in excavation and stockpile work is accounted for, mainly, by its exclusive independent hydraulic crowd and hoist action, the hydraulic steering, and wheel-type traction, which permits truck speeds to and from jobs. The power crowd permits bucket to keep digging until loaded . . . no digging with wheels. The hydraulic steering gives the driver easy, fast, finger-tip control.

Four standard interchangeable buckets of two types are available. Digging buckets with four bottom teeth in 1 and 1¼ cubic yard (heaped) capacities; materials handling buckets in 1½ and 2 cubic yard (struck) capacities.

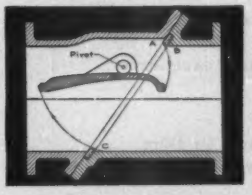
Complete information and prices may be obtained by writing the manufacturer, Dempster Brothers, Inc.

DEMPSTER DIGGSTER

DEMPSTER BROTHERS
881 DEMPSTER BLDG.,
KNOXVILLE 17, TENNESSEE



YOU GET *Cushioned Closing* WITH CHAPMAN TILTING DISC CHECK VALVES



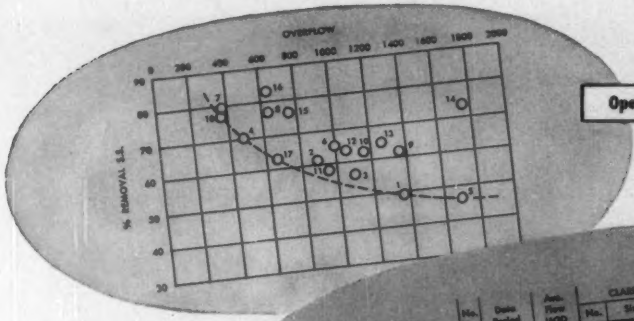
Cross-section of the Chapman Tilting Disc Check Valve illustrating the way that the balanced disc is supported on the pivot, with arrows showing the travel of the disc. A feature of the design is that the disc seat lifts away from the body seat when opening, and drops into contact when closing, with no sliding or wearing of the seats.

There's no impact on closing — with this valve by Chapman. The balanced disc rides the flow smoothly — uses the fluid or gas itself to cushion the closing action. The disc lifts away from the seat easily on opening; closes quickly, positively—yet quietly.

Consequently, there's no rubbing on the seats—little wear on hinge pins and bearings. Repair needs are at a minimum — maintenance costs low.

Chapman Tilting Disc Check Valves are available in either iron or steel. Write today for catalog with complete technical information.

The Chapman Valve Manufacturing Company
INDIAN ORCHARD, MASSACHUSETTS



Operating Data on Dorr Sifeed Clarifiers—

radial flow—round or square units. Chart graphically illustrates results given in table below.

LOCATION	No. Yrs.	Data Period	Aver. Flow MGD	CLARIFIERS No.	Size	W.D.	Det. Hrs.	Other Det.	SUSP. SOLIDS Raw	Eff.	% Rem.
1 Washington, Blue Plains Pl.	7	1944-45	136.3	12	106' Dia.	14	1.55	1350	163	83	49
2 Gary, Ind.	4	1941-44	90.11	4	75' Sq.	10	2.0	900	265	104	61
3 Winnipeg, Man.	2	1943-44	48.0	2	115' Dia.	13	1.98	1100	348	159	55
4 Battle Creek, Mich.	5	1930-43	4.98	2	80' Dia.	10	3.66	490	283	85	70
5 Buffalo, N. Y.	3	1939-21	135	4	160' "	15	1.6	1690	209	114	46
6 Albuquerque, N. M.	7	1939-40		1	30' "	12.3	2.21	995	254	91	64
7 Yakima, Wash.	1	1943	7.5	4	90' "	9	4.32	373	110	23	79
8 Appleton, Wis.	7	1936-43	4.8	3	70' "	10	2.90	623	276	63	77
9 Baltimore, Md.	4	1939-44	89.5	3	170' "	12	1.64	1360	714	52	61
10 Springfield, Ohio	4	1937-40	14.8	2	90' "	10	1.55	1160	166	63	62
11 Mansfield, Ohio	2	1944-45	3	1	65' "	12	2.28	908	306	87	38
12 Cedar Rapids, Ia.	9	1936-44	4.31	1	75' "	11.5	1.95	1060	354	132	63
13 Austin, Texas	2	1944-45	5.64	1	75' "	12	1.69	1275	263	95	64
14 Neenah-Menasha, Wis.	4	1942-45	7.93	2	75' "	10'	1.0	1790	681	188	72
15 Denver, Colo.	5	1939-43	46		170' "	9.7	2.34	790	187	44	77
16 Sheboygan, Wis.	1	1944	6.4	2	40' "	10	2.8	625	342	60	82
17 Ypsilanti, Mich.	3	1942-45	1.68	2	40' "	9	2.5	660	236	87	63
18 Monroe, Mich.	5	1938-46	4.5	2	50' "	7.8	3.55	370	329	79	77

check these facts ON DORR SIFEED CLARIFIER PERFORMANCE

A few moments' study of this graph and the supporting table will give you a clear idea of what kind of performance you can expect Dorr Clarifiers to deliver.

These are long term records . . . obtained by competent plant chemists at well established installations. We believe they cannot be equaled.

Performance is one of the primary factors upon which Clarifier excellence should be judged. Are you getting the best?

We'd like to give you some figures on Dorr Clarifier repair costs too. Ask a Dorr engineer for the facts.

Sifeed is a trademark of The Dorr Company, Reg. U. S. Pat. Off.

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Mr. Roland Bayerlein
Nordberg Manufacturing Co.
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Dear Mr. Bayerlein:

I wish to inform you on the operation of the three TSG 215 natural gas burning diesel engines that we purchased from your company and which equipment has been in service in our city for over one year.

We are more than pleased with the generating cost of these units. We were pleasantly surprised to learn that we could operate on less than 3% pilot oil. Our municipal system has, during the past year, paid the annual installment on the bonds required for the installation of this equipment out of the additional profits realized from the economical operation of natural gas fuel generation. In addition, we realized over and above our bonded indebtedness an additional profit of $30,000.00 for the fiscal year ending 1950. This means to us that our present operation over our former operation allows us to pay for the equipment while we are realizing an additional profit.

I am passing this information on to you because I know of the interest that you took in this plant during its construction.

With every good wish, I remain,

Sincerely,

Leon Gary
Mayor

LG/z

NORDBERG Gas Burning Diesels pay for themselves . . . *plus* a profit bonus!

THIS unsolicited letter from Mayor Gary, of Houma, Louisiana, speaks volumes for the economy and performance of Nordberg Duafuel* Engines. The three gas burning units serving this progressive municipality were installed as a result of the foresightedness of Mayor Gary and his associates. Each of these engines develop 2000 hp at 225 rpm, generating a total of 4230 kw in Louisiana's largest Diesel plant.

Can *your* city point to profitable power plant operation like this? If not, it will pay you to investigate the dependable, economical service available with Nordberg Diesels . . . in sizes from 10 to 9600 hp. Write for details, outlining your power requirements.

*(Trade Mark for Nordberg engines burning oil, gas or a combination of both)

NORDBERG MFG. CO., Milwaukee 7, Wisconsin

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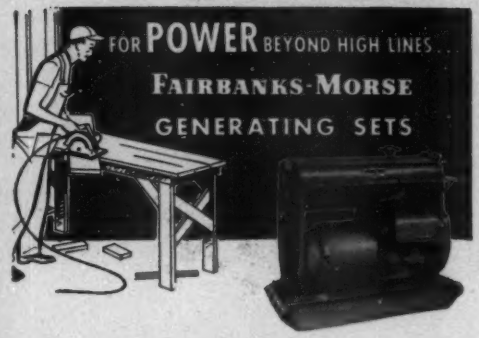

If you have a problem in power supply for a construction job; lighting an airfield or boat landing; power and light for a tourist court, summer camp or restaurant; lighting and heating country schools or churches; or for any other similar purpose, get the facts about dependable Fairbanks-Morse Generating Sets.

They are available in capacities from 600 to 35,000 watts, A.C. or D.C., and equipped with manual, remote or automatic starting devices. For details, see the Fairbanks-Morse dealer nearest you, or write Fairbanks, Morse & Co., Chicago 5, Ill.

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FILTER SAND AND GRAVEL

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Shipment in bulk or bagged.

Many of the larger filter plants throughout the United States are equipped with our products.

Prompt Shipment

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Muscatine, Iowa

P. O. Box No. 307 **Phone: 193**

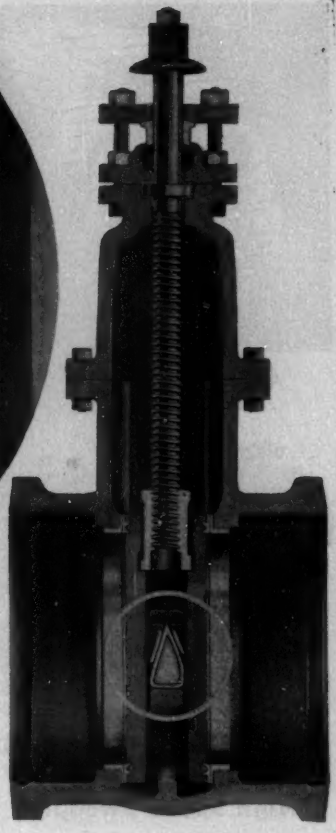
IT'S ALL IN THE *Wedge*

THE SHORT SIDE

The gate on this side is pulled first. This quickly releases wedging pressure on both gates.

THE LONG SIDE

of the Wedge causes a powerful seating action of both gates.



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Easy OPENING *Tight* CLOSING

Yes, the first turn of the valve stem mechanically starts one gate first. This at once unwedges both gates — no dragging — easy lifting. In closing, both gates are wedged tight shut WHEN they reach the closing point opposite their seats, not before. This minimizes friction, wear. All Rensselaer Double Disc Gate Valves in sizes 10" and larger have SOLID BRONZE Wedges for smoother and more positive closing and opening.

Other Rensselaer features include SOLID BRONZE parts subject to wear. Castings are high tensile strength corrosion-resistant iron. Interchangeability of parts insures low maintenance cost. There are thousands of these fine valves in use. Ask your Rensselaer representative for further information on these and other Rensselaer products.

TEN POINTS OF SUPERIORITY

1. Easy to Operate — No binding of Stem; Wedges independent of Stem and Stem Nut can't bind.
2. Stems and Stem Nuts both SOLID BRONZE.
3. Wedges, SOLID BRONZE in sizes 10" and larger. Wedges in these sizes have long and Short Wedging Surfaces. Long side insures greater power in Closing. Short side, maximum ease in Opening.
4. High Tensile Strength, Corrosion Resistant Iron.
5. Stuffing Box Bolts rust-proofed. Nuts BRONZE.
6. Easy to Repack — ample stuffing box depth and diameter.
7. Minimum wear on Rings — Gates Seat, Unseat, in "fully closed" position.
8. Parallel, collapsible Discs — no sticking in closed position or binding of Stem due to tipping.
9. Interchangeable parts — due to precision Casting and Machining.
10. Long Life — Thousands still operating perfectly, some after 50 years.

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TROY, NEW YORK

Division of Neptune Meter Company

Atlanta, Bala-Cynwyd, Pa., Chicago, Dallas, Denver, Glendale, Cal., Haverhill, Mass., Kansas City, Mo., Memphis, New York City, Oklahoma City, Pittsburgh, San Carlos, Cal., Seattle.

14

. . . as simple and maintenance-free as a Waterwheel!

LULL Fluid-Driven SUPER SWEEPER

MODERN LULL FLUID DRIVE provides

High Speed Sweeping All Year 'Round!

Application of LULL Fluid Drive marks an important milestone in modern sweeper engineering. No universal joints! No complicated gear and shaft mechanism for driving broom! LULL Fluid Drive provides flexibility and high efficiency under all operating conditions because it is simple and thoroughly dependable.

In addition, LULL Finger-tip Power Hydraulic Controls regulate broom height, angle settings, and broom rotation speed. Operator never leaves his seat. No time lost deadheading, backing, or making manual adjustments!

On any sweeping job . . . streets, blacktop highways, air ports, parking lots, strip mines . . . you can't beat the all year round performance of a LULL Fluid-Driven Super Sweeper. 5′, 6′, and 7′ models are all priced within your means.

Here's How LULL FLUID DRIVE Works!

Powerful LULL Precision Hydraulic Pump forces fluid through flexible hose into intake port "A". Then fluid drives vanes around motor cavity until it reaches outlet port "B". Now fluid is returned to pump for recirculation. Smooth power is provided for the broom without complicated drive mechanism.

LULL FLUID DRIVE is simplicity itself. This means fewer moving parts . . . longer maintenance-free service. Lull Super Sweepers do more sweeping in less time and at lower cost!

WRITE TODAY for new LULL Sweeper Bulletin AD40

LULL Manufacturing Company

[redacted]

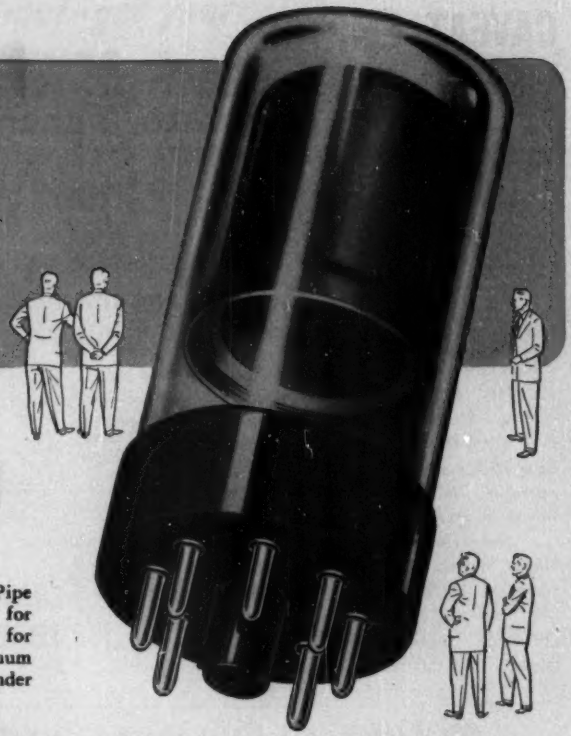
Designers and Builders of
The Largest Line of Allied Equipment
for Industrial Wheel Type Tractors

SHOVELOADER

UNIVERSAL LOADER

SHOVELOADERS • UNIVERSAL LOADERS • FLUID-DRIVEN SWEEPERS • LULLDOZERS • SHOULDER MAINTAINERS

formed under vacuum for greater strength



Vitrified CLAY PIPE

DE-AIRING — a process that makes Clay Pipe *stronger* for greater load-bearing, *denser* for less absorption, and dimensionally *truer* for faster installation — takes place in a vacuum press as the pipe is precision-formed under pressures as high as 75 tons.

De-airing, like the exclusive Vitrification process, is an outstanding example of technology at work for you . . . bringing you *better* Clay Pipe — stronger, denser, truer lengths for every sewerage and drainage use. Industry-wide research is constantly improving the traditionally high quality of Vitrified Clay Pipe — and developing new test procedures to *insure* consistent standards.

Vitrified Clay Pipe requires no "extras" . . . no special coatings to protect it from deterioration. It is corrosion-proof *throughout* — completely immune to destructive chemicals in soil, sewage, or industrial waste. You can specify it *safely*, with complete assurance that Clay Pipe *never wears out.*

NATIONAL CLAY PIPE MANUFACTURERS, INC.
100 N. LaSalle St., Rm. 2100, Chicago 2, Ill.
206 Connally Bldg., Atlanta 3, Ga.
703 Ninth & Hill Bldg., Los Angeles 15, Calif.
311 High Long Bldg., 5 E. Long St., Columbus 15, Ohio

SPECIFY *Vitrified* CLAY PIPE

WRITE FOR DETAILED INFORMATION
Additional information and data on Vitrified Clay Pipe, Wall Coping and Clay Flue Lining sent FREE on request. State your specific questions. Simply contact the regional office nearest you.

C-131-9

CAVEAT EMPTOR
(Let the Buyer Beware)

Why take a chance?

Insist on a Fog Insecticide Applicator

with Underwriters' Listing and Underwriters' Seal

You can rely on TIFA. This amazingly effective unit carries the Underwriters Seal . . . is backed by 10 years' experience in manufacturing fogging-machines. TIFA will meet your most rigid specifications. And it will save you money in overall operation.

Each TIFA machine is compact, portable and one-man operated. It discharges insecticides in a clean *dry* fog which spreads quickly over and around all objects . . . permeates tiniest crevices . . . seeks out every hidden insect. It can handle solutions, emulsions, suspensions. Its range of droplet control is from 1/2 to 200 microns.

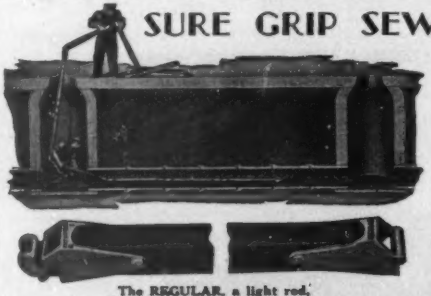
Put TIFA to work on garbage and fill dumps . . . in sewers . . . in thickly populated areas . . . over swamps . . . in recreation centers—wherever people congregate and insects annoy them.

For better health and living, put TIFA to work in your community!

TIFA

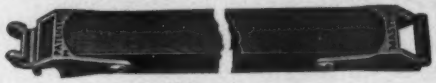
A Product of
COMBUSTION EQUIPMENT DIVISION
TODD SHIPYARDS CORPORATION
81-16 45TH AVENUE, ELMHURST, QUEENS, N. Y.

SURE GRIP SEWER RODS and ACCESSORIES



The REGULAR, a light rod.
Fir stock 1¼ x 1¼ inch square.

are joined together with a dual lock forming a rigid chain that will float. They can be coupled or uncoupled upon the street if desired. Made in two sizes.



The MASTER, a heavy duty rod,
Fir stock 1⅝ x 1⅝ inch square.

Write for catalog on complete line of sewer cleaning equipment.

EXPANDING SEWER MACHINE CO.
NAPPANEE, IND.

***Throughout America*—Dickinson Lawn Seed**

In parks and on public grounds throughout America you will find smooth velvety lawns built with time proven Dickinson lawn grass seed. Quality seed, blended according to formulas that have been tested and improved throughout the years. Write for complete information.
The Albert Dickinson Company, 2764 West 35th Street, Chicago 32, Ill.

DICKINSON

CUT *YOUR* SWEEPING COSTS *75%*
Wilshire POWER SWEEPER

Picks up everything from cigarette butts to pop bottles in one easy operation! Write today for dealer nearest you and **FREE on-Your-Job DEMONSTRATION.**

For dealer nearest you, write Dept. C-8

Wilshire
POWER SWEEPER CO.
528 W. Chevy Chase Drive
Glendale 4, Calif.

Sweeping the Country since 1940!

Get ready for the long haul—get your
Free TRUCK SAVER *Inspection NOW!*

- **Open to all International Truck owners**
- **No charge, no obligation for complete 99-point checkup**
- **Free offer expires September 30, 1951**

If you want to make it easier to get peak efficiency from your International Trucks in an uncertain future, get your free Truck Saver Inspection now.

This Truck Saver Inspection is the first step toward warding off trouble in the uncertain months ahead. It can save you dollars now and could save you many more in the months ahead.

And the best part of it is that it doesn't cost you one penny. During the 90-day period ending Sept. 30, you can get your Truck Saver Inspection free of charge.

So if you want to protect yourself, make an appointment with your International Truck Dealer or Branch. Get your Truck Saver Inspection, get complete details on how the complete new International Truck Saver Plan can save you time, trouble and money.

Look what the complete International Truck Saving Plan offers

The complete International Truck Saver Plan has been developed by experts, after a thorough study of today's truck operating problems. It offers these benefits to International Truck operators:

1. Better performance over a longer truck life: trucks are kept in shape to do the most efficient job possible until they can be replaced by new units.

2. Delays minimized in getting new parts: by anticipating future requirements, the demand for needed parts can be accurately estimated.

3. Maintenance costs cut, down time reduced: by preventing major breakdowns, a big saving is effected in both time and money.

4. Truck value maintained: trucks kept in the best possible condition are worth more when it's time for replacement.

Start getting your Internationals in top shape for the future

Thousands of International Truck owners have already begun putting the International Truck Saver Plan to work for them.

Call your International Truck Dealer or Branch and arrange for a free Truck Saver Inspection. You'll get complete information on how the plan can keep your trucks rolling at peak efficiency.

International Harvester Builds
McCormick Farm Equipment and Farmall Tractors . . . Motor Trucks
Industrial Power . . . Refrigerators and Freezers

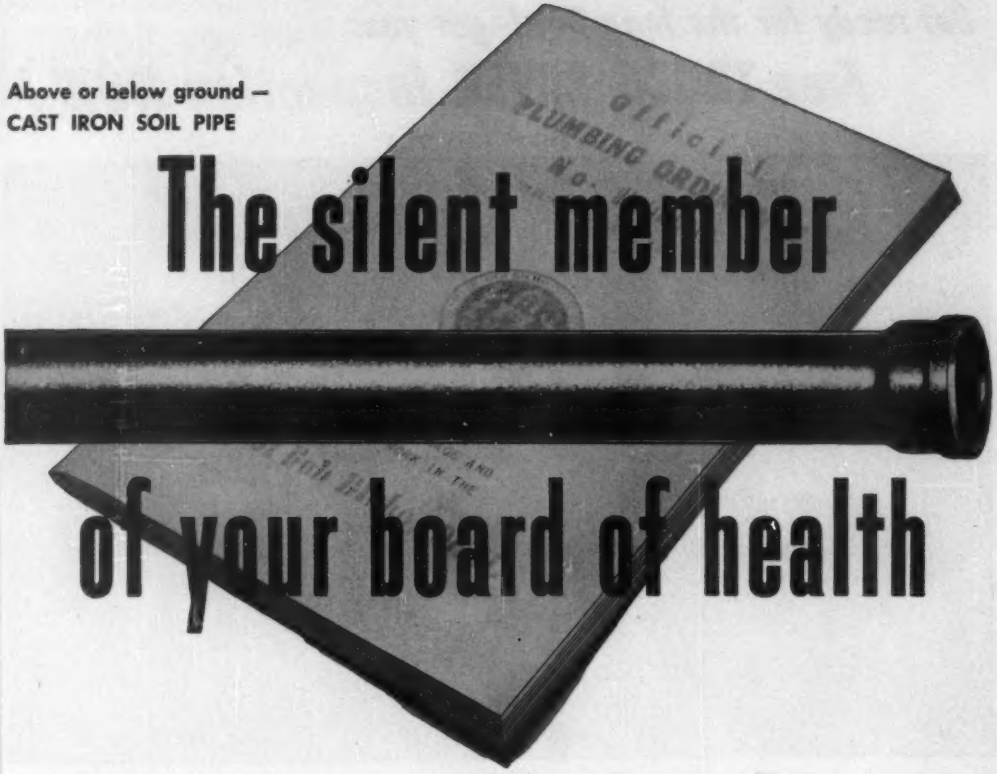
International Harvester Company • Chicago

INTERNATIONAL TRUCKS

Heavy-duty engineered for the long haul

Above or below ground —
CAST IRON SOIL PIPE

The silent member of your board of health



Your plumbing code is the silent voter in any meeting of your Board of Health. Its two-fold function is to protect your community's health . . . and its pocketbook. Significantly, like all plumbing codes, it recognizes the importance of **cast iron soil pipe.** *Can you pick up a plumbing code anywhere in the country, that isn't built around* ***cast iron soil pipe*** *and fittings?*

For Public Health authorities and municipal engineers have long known that **cast iron soil pipe** outlasts any building, offers added insurance against dangers like ground water pollution and escaping sewer gas. Moreover, it's satisfying to know that taxpayers won't have to worry about later street openings, trench excavations, backfill and repaving for jobs that should have been done right in the *first* place.

• • • • •

You know your plumbing code is protecting your community when it gives preference to **cast iron soil pipe** and fittings . . . the plumbing material that has withstood the test of time.

CAST IRON SOIL PIPE INSTITUTE
Heurich Building, 1627 K. St. N.W., Washington 6, D. C.

This advertisement is sponsored by

CAST IRON SOIL PIPE INSTITUTE

Alabama Pipe Company
The American Brass & Iron Foundry
Anniston Foundry Company
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Attalla Pipe & Foundry Company, Inc.
Buffalo Pipe & Foundry Corporation
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Charlotte Pipe & Foundry Company
Combustion Engineering—Superheater, Inc.
Crown Pipe & Foundry, Inc.
The Eastern Foundry Company
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Somerville Iron Works
Tyler Pipe & Foundry Company
Walker Machine & Foundry Corporation
Western Foundry Company
Williamstown Foundry Corporation

TIME SHEET

Job | Worker | Hours | Date

Saved!

...Hundreds of Man-Hours on New Installations

YOU

CAN NOW DO AN ALL MECHANICAL-JOINT JOB WITH PIPE, FITTINGS, VALVES AND HYDRANTS

...with EDDY Mechanical-Joint Valves

After excavation, two unskilled workmen and a ratchet wrench can install Eddy Mechanical-Joint Valves in a jiffy. This can mean many man-hours saved each year. What's more, the work can be done in a flooded trench, or in any kind of weather—for no caulking, no lead-melting is needed . . . and all joints are *bottle-tight* under pressure. Valves meet AWWA specifications, and are available in sizes 3" to 12" for use on both sand-cast and centrifugally-cast iron water pipe.

...and EDDY Mechanical-Joint Fire Hydrants

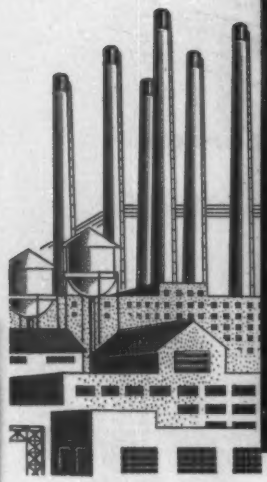
Since 1849 EDDY For Long Service

Mechanical-Joint connection allows quick, easy installation or removal (with or without auxiliary valve). Hydrants also available with bell or flanged connection. All operating parts accessible by removing top cover. Hydrants open fast, close easily. Even a bent stem does not cause water loss, and drip-action prevents freeze-up. Stock up now on both Clow Mechanical-Joint Cutting-in Valves and Hydrants. Be ready to make easy, speedy installations when needed!

EDDY VALVE COMPANY

WATERFORD NEW YORK

A Subsidiary of James B. Clow & Sons



Non-clogging two-vane closed impellers, grease-lubricated anti-friction bearings, easy accessibility to the split stuffing-box gland and impeller eye . . . are typical of the many Worthington MIXFLO *features assuring low-cost, trouble-free sewage pumping.*

How is Bridgeport's Sewage Pumped?

It's full of industrial waste . . . a problem built for Worthington Pumps

Here's another municipality which has turned its sewage pumping over to Worthington—100%.

These five Worthington Vertical MIXFLO sewage pumps are located in Bridgeport's Westside sewage plant—installed in 1946. Three are 20-inch, two are 16-inch MIXFLOS.

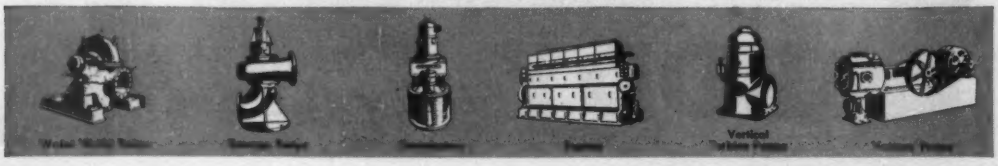
Bridgeport's Eastside plant duplicates these five pumps, and in addition uses two Worthington dry vacuum pumps and a Worthington air compressor.

In many other places, too, Worthington—world's largest manufacturer of pumps—is keeping pace with developments in sewage treatment and disposal by furnishing pumps of utmost dependability.

The Worthington MIXFLO line offers the industry's widest choice of sizes and types. So take a tip from New York, Chicago, Philadelphia, Bridgeport—find out why *there's more worth in Worthington.* Write Worthington Pump and Machinery Corporation, Public Works Division, Harrison, New Jersey.

WORTHINGTON

SEWAGE PUMPS W.1.1



Flex-O-Lite REFLECTIVE Glass Beads

. . . TO YOUR NEED FOR GREATER REFLECTIVITY AT LOWER COST

Star performers, through and through, Flex-O-Lite Reflective Glass Beads are clearer by day—brighter by night—the result of unique methods of manufacture that assure greatest possible reflectivity. Economical safety sentinels for 'round-the-clock protection on the Nation's highways, Flex-O-Lite Beads enjoy wide recognition and the official endorsement of numerous state, county and municipal highway officials and safety engineers... the result of outstanding service in the cause of traffic safety combined with maximum durability, clarity and brilliance. For full protection specify Flex-O-Lite Glass Beads.

Microphoto of Flex-O-Lite bead grouping amply demonstrates their perfect spherical shape and crystal-clear quality.

Flex-O-Lite Glass Beads, available in a variety of wanted sizes, meet specific standards for top application to beaded traffic lines and for admixture to traffic paint. Specify Flex-O-Lite Glass Beads for your toughest jobs.

NOW AVAILABLE!

Flex-O-Lite Traffic Line Bead Dispenser for installation on Kelly-Creswell Stripers. Write today for additional information and prices.

Send for

FREE LITERATURE

Your requests for information and prices are welcomed and will receive prompt attention.

FLEX-O-LITE MFG. CORPORATION

8301 FLEX-O-LITE DRIVE • P. O. BOX 3066 (AFFTON BR.)
ST. LOUIS 23, MISSOURI

...3 strikes against you already!

—but you're NOT necessarily "OUT"!

Maybe next winter seems far away. But don't let the calendar fool you! When it comes to delivery of Rock Salt for snow and ice control, you have three strikes against you already.

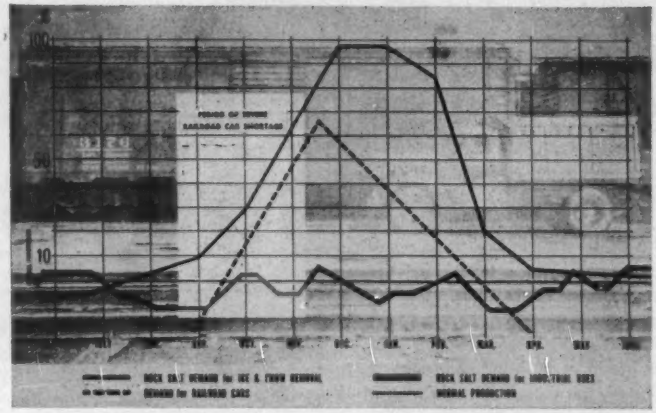
Here's what we mean:

Railroads	**First priority for Rock Salt in winter must go to the railroads —to keep switches, safety signals and other controls open so freight and passenger trains can move.**
Industry	**Second largest Rock Salt consumer is American industry— particularly the chemical industry which uses Rock Salt to produce basic chemicals required by industries.**
Government	**Always a major Rock Salt consumer, this customer is getting bigger every day, as a result of the speed-up in the Nation's defense program.**

Now look at the chart. Notice the terrific Rock Salt demand between September and March. Notice the shortage of freight cars during November, December and January—the months you'll be wanting your Rock Salt in a hurry for highway snow and ice removal. During these months, although we'd like to fill your order promptly, 6 weeks or 1½ months will be our minimum delivery time!

"A smart man buys before snow flies," . . . 75% of next winter's Rock Salt should be in your bins before October first.

Send in your order now, while we can make deliveries promptly.



Did last February's sleet and snow (plus the railroad strike) find you without Rock Salt? If it did, that's another good reason for ordering your next winter's supply today!

CAYUGA ROCK SALT

Sizes for all purposes

NATURE'S PURE PRODUCT—Mined 2000 Feet Below Historic Cayuga Lake

CAYUGA ROCK SALT CO., INC., MYERS, N.Y.

SIZES FOR ALL PURPOSES — *Call Nearest Distributor* — **BULK OR BAGS**

W. H. SHURTLEFF CO.
2½ Union Wharf,
Portland 3, Maine
Telephone 3-7461
also
Dutton Street, Bangor, Maine
Telephone 7902

BARNES SALT COMPANY
Corner Benefit and India Streets
Providence, Rhode Island
Telephone Dexter 1-7270

SOUTHERN SALT COMPANY
222 West Main Street,
Norfolk, Va.
Telephone 2-4638

THE CHEMICAL CORPORATION
54 Waltham Ave., Springfield 9, Mass.
Telephone 9-5601

Warehouses:
Pittsfield, Mass.
Telephone 2-0718
Boston, Mass.—30 Boylston St.
Telephone Liberty 2-7171
Hartford, Conn.
Telephone 6-3223
Concord, N. H.
Telephone 3394
New Haven, Conn.
Telephone 8-3827

CHAS. SCHAEFER & SON, INC.
364 Meserole Street, Brooklyn 6, N. Y.
Telephone Hyacinth 7-2460

CHAS. SCHAEFER & SON, of N. J., Inc.
Townley, N. J.
P. O. Box 236, Elizabeth, N. J.
Telephone Elizabeth 2-7010

KERR SALT COMPANY
939 North Delaware Ave.,
Philadelphia 23, Pa.
Telephone Market 7-4094

KERR SALT COMPANY
901 South Wolfe Street,
Baltimore 31, Md.
Telephone Wolfe 0282

E. J. FEDIGAN, INC.
Anderson & Isabella Streets
N. S. Pittsburgh 12, Pa.
Telephone Cedar 1-0746

YOUNGSTOWN BUILDING MATERIAL & FUEL CO.
1505 Logan Avenue
Youngstown 4, Ohio
Telephone 3-4101

OBRECHT SALT COMPANY
1235 Key Hway., Baltimore, Md.
Telephone Saratoga 2370

INDUSTRIAL SALT SERVICE
A Division of Highway Materials Co., Inc., Groton, N.Y.
Telephone Groton 154

Branch Warehouses:
Congers, Rockland Co., N. Y.
Niagara Falls, N. Y. (Lehigh Valley R.R. Co. Roundhouse)

A. F. NILSON, Sales Engineer
12 Mercer Ave., Chatham, N. J.
Telephone Chatham 4-7003

Safety PLUS

Aerial POWER SAW Carrier

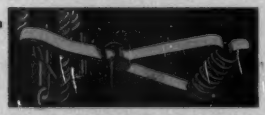
Now treemen can take and use their power saws aloft safely. The Aerial Power Saw Carrier hoists the saw and supports its weight. The operator is suspended in his saddle entirely independent of the saw. He may let go of the saw while he changes position and it hangs free until he is ready for another cut. When cutting, he has only to guide it. He can adjust its height in an instant without even stopping his cut. A slight downward pressure is exerted on the saw to keep it in the cut. On completion of a cut the operator has but to release that pressure and the saw automatically rises free of the cut.

The Aerial Power Saw Carrier may be used with equal safety either aloft a tree or working from the ground. Makes flush cuts without splintering or tearing bark. Speeds tree trimming, topping or completely taking down a tree. Experienced treemen have taken down trees with a butt diameter of three feet and more, in less than one hour, with one man doing all the cutting.

Steel plate with sharp pointed, downward slanting prongs that grip into tree.

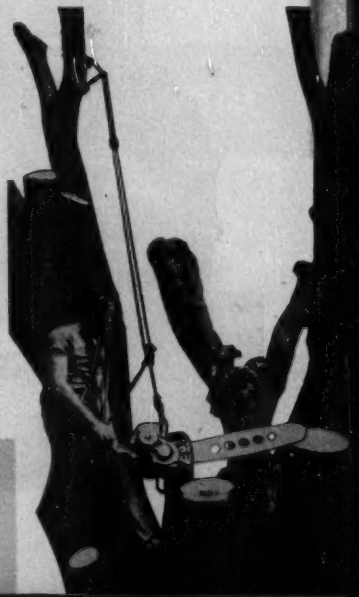
CONSTRUCTION FEATURES

The Aerial Power Saw Carrier consists of a steel plate with sharp pointed downward slanting prongs that grip into the tree; a crane arm to hold Carrier away from tree and permit it to swing through wide arc; a tension spring attached between end of crane arm and pulley through which hoisting rope is reeved; a clamp to attach hoist to saw and another hand-operated clamp attached to hoisting rope to hold and adjust position of saw. A flexible cable passing through center of the spring, provides an extra safety feature in case of breaking of spring. The Carrier is equally adaptable to gas or electrically operated saw. Weight is immaterial.



Pressure on hand-clamp attached to hoisting rope permits adjusting height of saw.

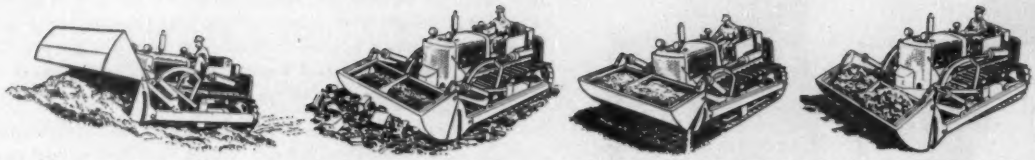
Clamp for attaching hoist to saw. Tightens firmly with bolt and screw nut.



LE ROY MACHINE COMPANY, INC.

EAST MAIN ROAD LE ROY, N. Y.

"Cuts Costs



Prepares the site | Crushes and compacts refuse | Transports and spreads earth cover | Grades and levels finished area

POWERHOUSE AT PORTSMOUTH — International Crawler with a Drott Bullclam disposes of Ohio city's refuse for 43¢ per ton.

Three-Quarters!"

Says Portsmouth, Ohio

One-Man Sanitation Squad—International Crawler teamed up with Drott Bullclam—does complete sanitary-fill job for one-fourth the cost of previous disposal method

When Portsmouth decided to turn bad to good—to cut the cost of refuse disposal and to improve waste property at the same time—they really went all the way.

Portsmouth "got Drott"—a Drott Bullclam powered by a rugged red International Crawler. Then things happened.

Disposal costs dropped to 43¢ per ton of refuse—a quarter of the previous cost. Eyesore gullies were reclaimed, turned into recreation grounds. All with one outfit and one operator.

The International Crawler-Drott Bullclam combination is the ONLY one-man equipment designed to handle all four steps of the complete sanitary-fill job. It scoops out the excavation, spreads the refuse, crushes and grinds the bulk, compacting and ironing it out with brute International Crawler power behind the specially curved front of the Drott Bullclam. Then it spreads and grades the cover dirt to finish the job.

It's a one-man sanitation squad! Ask your International Industrial Distributor for details. Or write today to:

Drott Manufacturing Corporation, Milwaukee 8, Wisconsin
International Harvester Company, Chicago 1, Illinois

BULLCLAM BY

DROTT

POWER BY

INTERNATIONAL

POWER THAT PAYS

To a man who'd like to rid his town of garbage . . . forever!

There's a growing trend, clear across the country, towards making whole cities and communities *permanently garbage-free.*

This is being done through ever increasing municipal sponsorship of the revolutionary General Electric Disposall®—which eliminates garbage by shredding food-wastes into tiny particles and washing them away, as *processed* food-wastes, to septic tank or sewer.

Because the advantages of garbage-free homes and streets are obvious—in improved public health and cleanliness, and reduced sanitation costs—some of you may already have discussed the possibility of adopting the G-E Disposall method as a civic project in *your* community.

With nearly 20 years of experience in creating and developing the food-waste disposer, General Electric is in an excellent position to give you the benefit of its technical and practical knowledge in this field.

Why not—for a start—take full advantage of our files of specialized information? Copies of the booklets and reprints detailed on the right are immediately available at no cost or obligation to you. Simply write General Electric Company, Dept. A8, Bridgeport 2, Connecticut.

Send for the free, non-technical, consumer booklet on municipal installations: "Dad—what was Garbage?"

"Dad—what was Garbage?"

SEND FOR THIS SPECIALIZED INFORMATION!

1. Booklet—"*The Use of General Electric Disposalls® with Private Septic Tank System.*"

2. Booklet—"*Technical Data on Food-waste Disposal Through the Public Sewage System.*"

3. Reprints of articles by leading authorities on sewage and garbage disposal problems.

4. Reprints of articles giving details of the garbage elimination plan in Jasper, Indiana—where approximately ¾ of all homes already have G-E Disposalls installed.

G-E DISPOSALL

CONVERTS FOOD-WASTE TO SEWAGE—ELIMINATES "GARBAGE"

Trim and specifications subject to change without notice.

You can put your confidence in—

GENERAL ELECTRIC

Mechanical soldiers need good shoes, too!

THESE are days of grave concerns . . . of conservation and mobilization for strengthening the nation's defense—for the survival of our national economy and ways of government—for the continuance of useful improvements and the maintenance of our streets, highways and sanitation facilities—for the keeping of every home-front machine in condition to stay on the job until its replacement again becomes a normal procedure.

That includes *your* municipal equipment and emphasizes *your* responsibilities as a public official or engineer. To benefit fully from the productive life that has been built into your "Caterpillar" equipment, you must be alert to its needs as time and hard usage take their toll in wear and depreciation. For instance:

How are the "shoes" on your Motor Graders?*

And how, too, are the Graders' blades? Your "Caterpillar" dealer can defer hard-to-get replacements by building up worn cutting edges. Take your problems to him and he'll be glad to make them his problems. He has the shop facilities, the skilled servicemen and the modern factory-devised techniques for doing astonishing parts-salvage jobs.

DO THIS NOW

YOU'RE THE DOCTOR

*Your Motor Graders' "shoes" are their tires. Their production depends greatly on the life of those tires. Check them regularly for cuts, breaks, and for sharp objects which may be working their way through casing and tube. Don't be a "hot rod." Keep wheels on the ground and don't spin them. Above all: *Reread your Operator's Instruction Book* regarding proper tire inflation and maintenance. Good care is good "medicine." Good care means sound tires. Sound tires mean steady performance and long service.

CATERPILLAR, PEORIA, ILLINOIS

CATERPILLAR

REG. U. S. PAT. OFF.

DIESEL ENGINES • TRACTORS • MOTOR GRADERS • EARTHMOVING EQUIPMENT

Here today – *and still here tomorrow*

that's the story of Iowa's Concrete Streets

Sioux City
13th Street, built in 1913. Photos taken 1927 and 1949

Ames
Lincoln Way, built in 1921. Photos taken 1922 and 1949

Missouri Valley
Huron Street, built in 1922. Photos taken 1922 and 1949

Council Bluffs
McGee Street, built in 1924. Photos taken 1927 and 1949

MANY Iowa motorists and taxpayers have vivid memories of the "Let's Get Iowa out of the Mud" programs of 30 or 35 years ago. Today these same motorists and taxpayers can be proud of the concrete pavements built a generation ago. Many of these fine old pavements have given continuous ***low-annual-cost*** service under weights and volumes of traffic far beyond what they were designed to carry.

The photos at left show a few of the time-proven concrete streets in Iowa. These streets are still good for many more years of service.

The outstanding durability of Iowa's concrete streets is typical of concrete pavements all over America. With concrete it's truly a case of "here today—*and still here tomorrow.*"

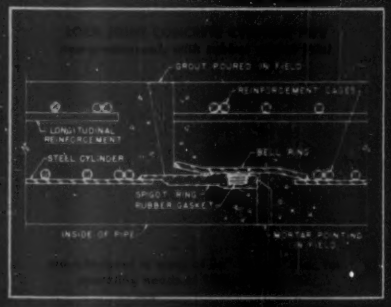
Long service is but one of concrete's many advantages. It also:

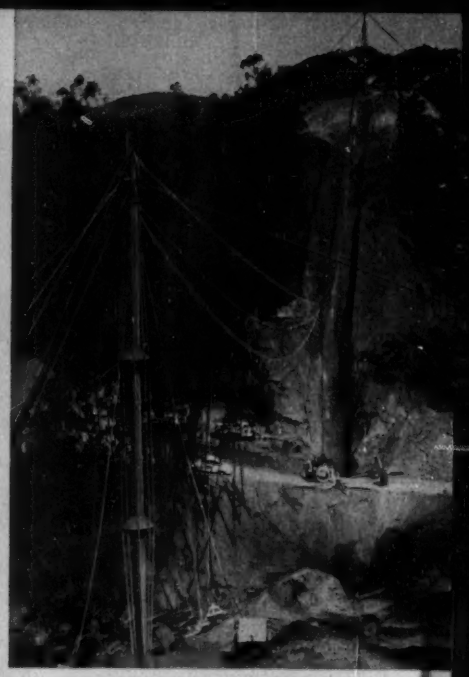
1. Is safer. Concrete reflects the most light, thus increasing visibility at night. Night or day, wet or dry, concrete's gritty texture affords uniformly high skid resistance.
2. Reduces street lighting costs because of its high light reflectance.
3. Requires far less maintenance.
4. Has moderate first cost. For all but lighter traffic, concrete usually costs less to build than other pavements of equal load-carrying capacity. Moderate first cost + low upkeep ÷ long years of service = ***low annual cost.***

Write today for your informative, free copy of "*Concrete Pavement Design*," distributed only in U. S. and Canada.

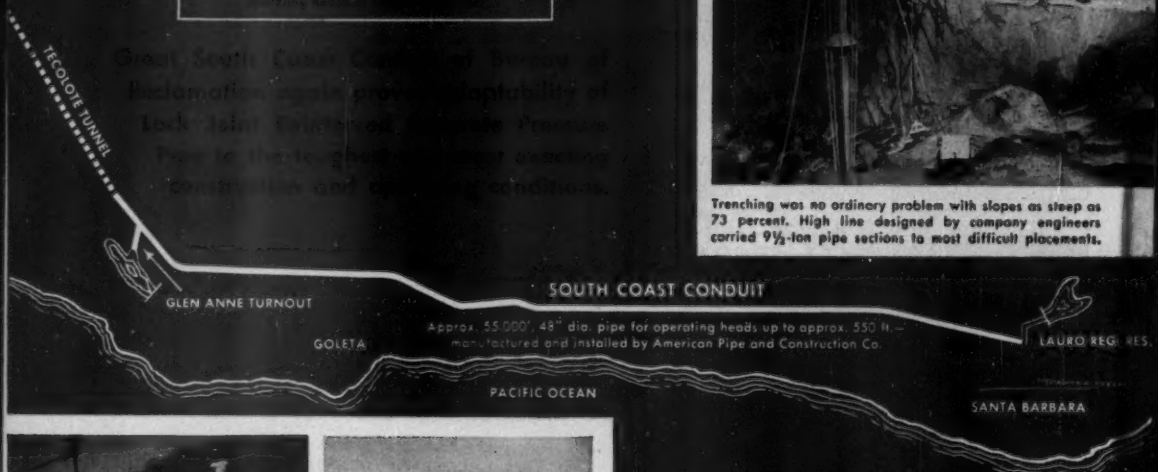
PORTLAND CEMENT ASSOCIATION
DEPT. A8-4, 33 WEST GRAND AVENUE, CHICAGO 10, ILLINOIS
A national organization to improve and extend the uses of portland cement and concrete through scientific research and engineering field work

Rough, Tough and Rugged!





Trenching was no ordinary problem with slopes as steep as 73 percent. High line designed by company engineers carried 9½-ton pipe sections to most difficult placements.


TECOLOTE TUNNEL
GLEN ANNE TURNOUT
SOUTH COAST CONDUIT
Approx. 55,000', 48" dia. pipe for operating heads up to approx. 550 ft.—manufactured and installed by American Pipe and Construction Co.
GOLETA
LAURO RESERVOIRS
PACIFIC OCEAN
SANTA BARBARA

1. Pipe laying was simplified to the maximum extent possible by use of Lock Joint Rubber Gasket Joints.

2. This 80 ft. deep cut was backfilled to a depth of 20 feet over the pipe. Lock Joint Pressure Pipe will sustain enormous external loads.

3. Entire line was engineered to go together piece by piece, including all fittings and specials, a characteristic advantage of Lock Joint Pressure Pipe.

Few, if any, main water supply lines have presented more difficult construction problems than the South Coast Conduit of the Cachuma Water Project. Spanning the mountains and valleys of the precipitous terrain between Tecolote Tunnel and the Santa Barbara area, the line was considered one of the toughest projects of this kind since the construction of the San Diego Aqueduct, which also used Lock Joint Reinforced Concrete Pressure Pipe. Now nearly completed, modern engineering and the superior qualities of Lock Joint Concrete Cylinder Pipe have helped make it practicable. Illustrations indicate some of the ways this versatile pipe met the needs of this rough, tough, rugged job.

This line is a brilliant example of permanent reinforced concrete pipe line construction. It will serve the Santa Barbara area for generations at peak performance and minimum maintenance expense. The same advantages are available to you for your project—advantages that mean reductions in the cost of delivered water.

American PIPE AND CONSTRUCTION CO.

Concrete Pipe for Main Water Supply Lines, Storm and Sanitary Sewers, Subaqueous Pipe Lines

P.O. Box 3428, Terminal Annex, Los Angeles 54, California

OAKLAND—SAN DIEGO—PORTLAND, OREGON

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Every manufacturer of SIGNS is having trouble in securing ample steel supplies. It's no secret with us—***We're short.*** We ***are*** making signs at no sacrifice in quality—not as many as we'd like—not enough to fill ***all*** orders promptly, but we are doing our very best. We will answer every inquiry with an honest report.

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MANUFACTURED BY

MIRO-FLEX CO., INC.

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Proper and efficient coagulation has long been recognized as an aid in removing certain types of tastes and odors. It would be erroneous to assume that any coagulant could completely solve your taste and odor problems without assistance from other control measures. However, it is wise to take advantage of efficient coagulation in the solving of these problems.

The above is just one of the many advantages of FERRI-FLOC, the superior coagulant.

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Atlanta, Georgia

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Melted and Poured *No Large Bell-holes to Dig*
Saves at Least 75%

Leadite is shipped in powder form, packed in sacks of 100 lbs. net each. Leadite tested and used for over 50 years ● Leadite joints improve with age.

Be sure it is Leadite and accept no imitations

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SPECIALISTS IN CEMENT GUN WORK

RESERVOIR LININGS (NEW AND OLD) ● CONCRETE AND MASONRY REPAIRS ● STEEL ENCASEMENT ● FIREPROOFING ● STEEL COAL BUNKER, STACK, HOPPER, AND PLATE LINING ● SEWER LINING AND REPAIRING ● CANAL, DITCH, AND DRAIN LINING.

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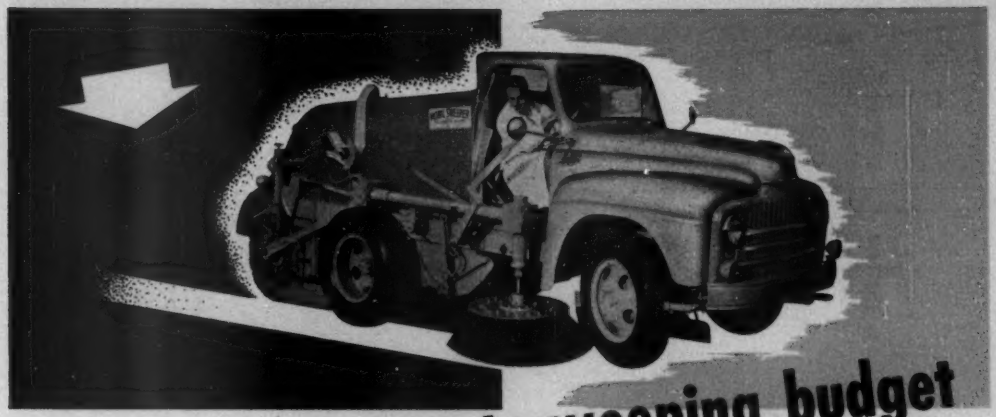
See our catalog in Sweet's



Balance your street sweeping budget with MOBIL-SWEEPER

You can keep your community happy with cleaner streets . . . *at lower cost.* Every budget is getting a closer check nowadays. Make sure you stay within yours by using the faster, more efficient Mobil-Sweeper.

Ten years of Mobil-Sweeper development brings you unsurpassed sweeping action. On streets, gutters, alleys, highways, parks and airports . . . even steepest hills, you get top sweeping performance.

Cleaner Sweeping is accomplished through the longer draught arms that make the rear pickup broom "full-floating" in the true sense. Deepest dips get a clean sweep where ordinary sweepers would skip over or drop refuse.

Gutters Are Swept More Thoroughly because the special "decreased arc" type gutter broom segments retain their flipping action longer, giving hundreds of extra miles of clean sweeping.

More Pavement Can Be Swept without stops because Mobil-Sweeper's big 200-gallon water tank provides spray for more pavement with fewer refills.

And Don't Be Fooled On Dirt Hopper Capacity . . . be sure that your sweeper fills to its rated capacity every time under normal operating conditions. Mobil-Sweeper fills its 2⅔ cu. yd. hopper to the overflow every time – that's what counts.

Maintenance Is Less Costly because the International Harvester engine lends itself to your standard maintenance.

It's The Safest Sweeper Built—Mobil-Sweeper protects the driver with shatterproof windshield, steel cab and 4-wheel hydraulic brakes. The low overall height and steel cab permit passage under low-hanging trees.

Write for details on how your community can save on street sweeping costs today!

MOBIL-SWEEPER
DIVISION OF
THE CONVEYOR CO.
3260 E. SLAUSON AVENUE
LOS ANGELES 58, CALIF.

CONVEYCO

THE CONVEYOR COMPANY
3260 East Slauson Avenue, Los Angeles 58, Calif. AC-9

Gentlemen:
Please send catalog with complete details and specifications for the Mobil-Sweeper.

Name _____ Title _____

Address _____ City _____

County _____ State _____

There's more to this picture than meets the eye...

SCENE: *Model 10* **AUTOMATIC SIGNAL IN ACTION**

Unseen—by the impatient motorist—is an on-rushing second train, concealed by the first. But there's no danger here of a dreaded "second train accident." Model 10's flashing lights will *continue* to operate, and the barrier arm will *remain* down until both trains have cleared the crossing.

Unseen—something that can't be illustrated: Model 10 *dependability*. Model 10's operate unfailingly, even when temperatures are extremely high or low... and regardless of snow or sleet. Moreover, Model 10's are on the job 24 hours a day—never go "off duty."

Unseen—the safety record established by Model 10's: Since 1936, thousands of these signals have been placed in operation at busy crossings, and *not a single accident has ever occurred as a result of operation failure.*

Unseen—the considerable dollar-and-cents economies effected by Model 10 protection. The low cost of Model 10 installation, operation, and maintenance is written in the records of a hundred railroads.

There's much more to tell about Model 10 safety and economy. Write for Bulletin AC6—748.

CERTIFICATE OF MERIT for Safety AWARDED WESTERN RAILROAD SUPPLY CO. BY THE NEW YORK HERALD TRIBUNE

WESTERN RAILROAD SUPPLY COMPANY

General Offices and Factory:
2428 SOUTH ASHLAND AVENUE • CHICAGO 8, ILLINOIS

Here's the greatest little crawler tractor you've ever seen . . . the new Oliver Industrial "OC-3". It's ideally balanced for most effective loading and dozing . . . engine is mounted *back* so that front of tracks and radiator are practically in line. This better balance gives you 40% more lift with a front end loader . . . does a superior job of dozing and grading because blade is mounted close to the tracks for easier handling . . . precise control! And, operators find this balanced tractor far easier to handle . . . far less fatiguing.

The new Oliver Industrial "OC-3" gives you a full 22 drawbar horsepower . . . plenty of power for jobs in its size. It's ruggedly built for the tough jobs . . . keeps maintenance costs down. Complete accessibility makes servicing easy.

For the complete story on the new Oliver Industrial "OC-3" and how it can help your operations, see your Oliver Industrial Distributor.

THE OLIVER CORPORATION

Industrial Division: 19300 Euclid Avenue, Cleveland 17, Ohio

A complete line of industrial wheel and crawler tractors

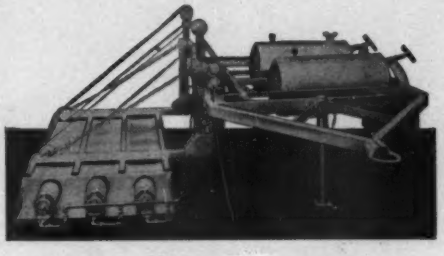
The EGAN LEAF COLLECTOR

FIRST IN THE FIELD AND BEST IN PERFORMANCE SINCE 1939

- FIRST ON THE MARKET
- JUST DRIVE IT — NO MANEUVERING NECESSARY
- THIS UNIT IS NOT A TRAILER
- LOW FIRST COST
- LOW LABOR COST—PAYS FOR ITSELF PLUS
- EASILY FITTED TO AND REMOVED FROM ANY SIZE DUMP BODY
- CLEANS FROM 3 TO 5 CURB MILES A DAY
- PICKS UP 7 TO 10 LOADS OF COMPRESSED LEAVES A DAY
- SHREDDED, COMPACTED LEAVES FURNISH VALUABLE COMPOST MATERIAL

EGAN EQUIPMENT COMPANY, Inc.

31 Elm Street — West Haven 16, Conn.



Why destroy Base of Pavement to apply a New Top

White Surface Heaters

These machines offer the quickest, cleanest, most economical method for repairing or resurfacing any bituminous pavement.

They melt 1" of old surface in 5 minutes. It can be scraped away and new top applied without damaging base course. This has been successful practice for years.

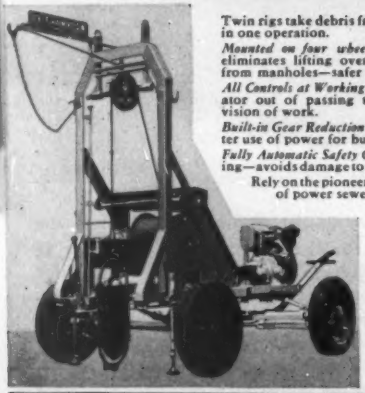
2 sizes: B-4, above, has 3x6' pan; Model B-1 has 6x6' pan, 6 burners. Square cutting edges. Dual fuel tanks. Hoisting winch. Can be towed on steel wheels, and moved by hand.

Write for Catalog

Elkhart — White Mfg. Co. — Indiana

NEW IMPROVEMENTS
Cable Drum Clutch
Upper Arch Sheave
Automatic Cable Level Wind

OK CHAMPION *Power Sewer Cleaner*



Twin rigs take debris from sewer to street in one operation.

Mounted on four wheel trucks — safer — eliminates lifting over or pulling away from manholes—safer tandem towing.

All Controls at Working End—keeps operator out of passing traffic—allows full vision of work.

Built-in Gear Reduction Ratio—allows better use of power for bucket travel.

Fully Automatic Safety Clutch—instant acting—avoids damage to tiles and machines.

Rely on the pioneer manufacturer of power sewer cleaners.

CHAMPION CORPORATION
Hammond, Indiana

SEND FOR LITERATURE

Champion Corporation, 4716 Sheffield Ave., Hammond, Indiana
Please send information on new OK Champion Power Sewer Cleaners.

Name.....Title.....

Address.....

FLORLINE

STREET, SAFETY, PARKING LINES $97.50 F.O.B. Detroit

Efficiently Made at Walking Speed!

Communities from coast to coast are drastically cutting the maintenance costs of traffic and parking lines with FLORLINE. Often pays for itself on the first job! Note these exclusive Florline advantages:

1 man, 1 hand operation. No attachments. Gravity feed.

Makes curved, straight, continuous or skip lines . . . 2, 3 or 4 inches wide with interchangeable carriages.

Holds 1½ gals. paint, lacquer, whitewash. Cannot spill. Portable, efficient, speedy. Pays for itself quickly. Easy to clean, transport and store. FULLY GUARANTEED.

Write today for folder and list of users. Dept. MB.

H. C. SWEET CO.

12083 Woodbine Ave. — Detroit 28, Michigan

water, water everywhere...

Sanitation HTH is available in cases of nine handy 5-lb. cans and in 100-lb. drums.

but *None* that's fit to drink

That's what can happen when flash floods overtax your water purification system. But not if you have on hand a substantial stock of Sanitation HTH, the recognized dry chlorine source for emergency stand-by service.

Less dramatic but equally effective is the part Sanitation HTH can play in your everyday chlorination operations. Disinfecting of mains, tanks, basins, filters and reservoirs is made easy... your regular water chlorination program is made more effective.

Anywhere that chlorine action is needed, you can rely on HTH to do the job—and do it well! So don't wait for emergencies before you call on this versatile, free-flowing, stable chlorine source.

Write today for your own copy of "Hypo-Chlorination of Water" and learn about the many uses of Sanitation HTH. Mathieson Chemical Corporation, Mathieson Building, Baltimore 3, Maryland.

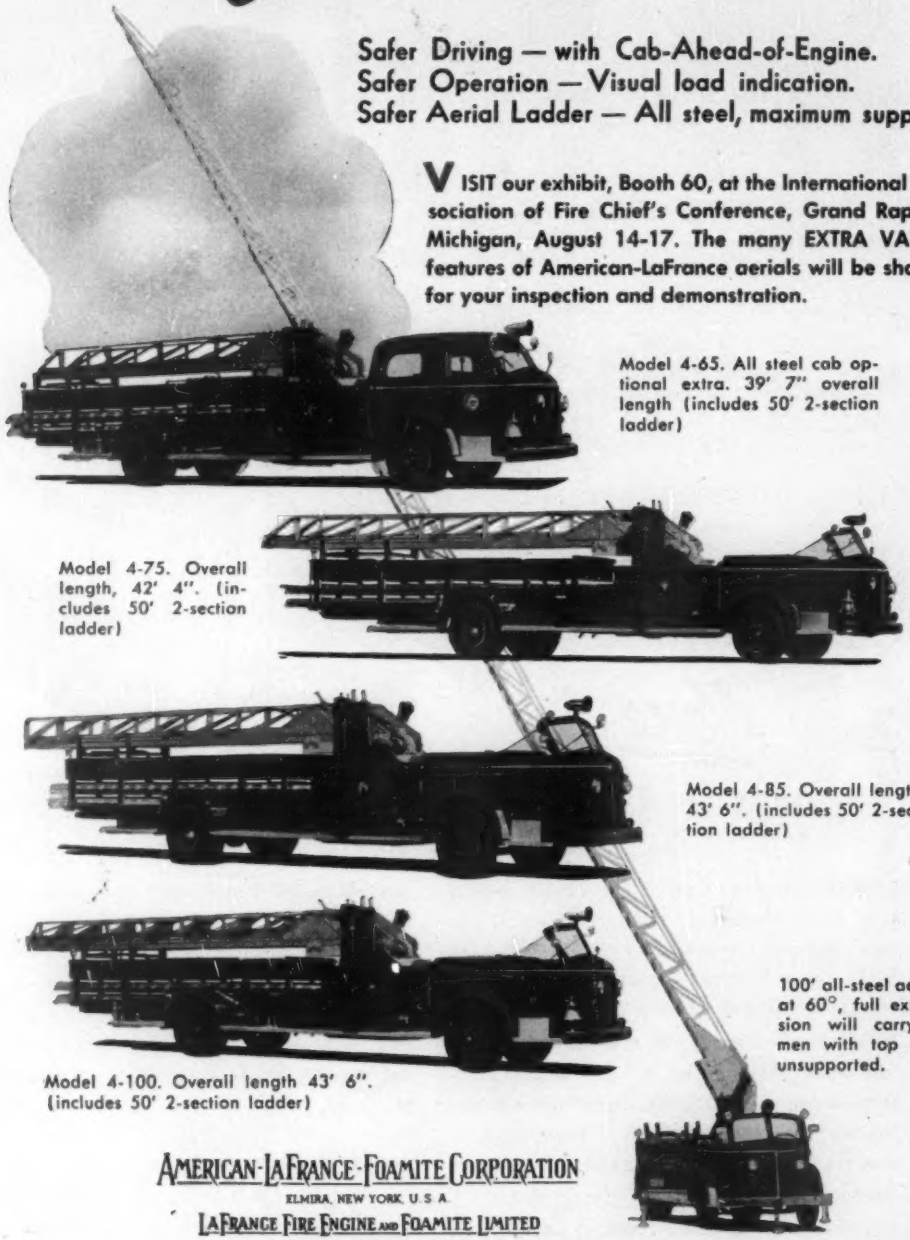
Mathieson CHEMICALS

SERVING INDUSTRY, AGRICULTURE AND PUBLIC HEALTH

THERE'S *Extra Value* IN AERIAL

Safer Driving — with Cab-Ahead-of-Engine.
Safer Operation — Visual load indication.
Safer Aerial Ladder — All steel, maximum support.

VISIT our exhibit, Booth 60, at the International Association of Fire Chief's Conference, Grand Rapids, Michigan, August 14-17. The many EXTRA VALUE features of American-LaFrance aerials will be shown for your inspection and demonstration.



Model 4-65. All steel cab optional extra. 39' 7" overall length (includes 50' 2-section ladder)

Model 4-75. Overall length, 42' 4". (includes 50' 2-section ladder)

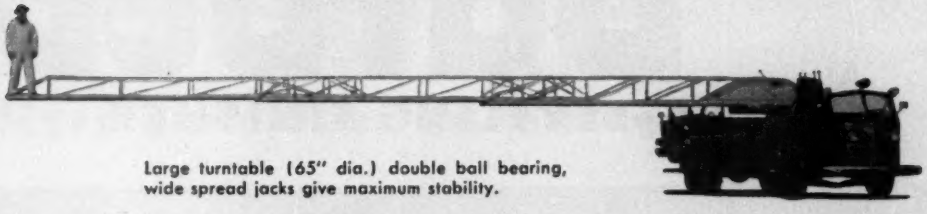
Model 4-85. Overall length 43' 6". (includes 50' 2-section ladder)

100' all-steel aerial at 60°, full extension will carry 5 men with top end unsupported.

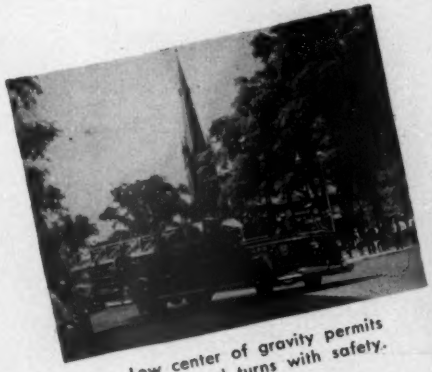
Model 4-100. Overall length 43' 6". (includes 50' 2-section ladder)

AMERICAN-LAFRANCE-FOAMITE CORPORATION
ELMIRA, NEW YORK, U. S. A.
LAFRANCE FIRE ENGINE AND FOAMITE LIMITED
TORONTO 9, ONTARIO, CANADA

LADDER TRUCKS BY AMERICAN-LAFRANCE



Large turntable (65" dia.) double ball bearing, wide spread jacks give maximum stability.

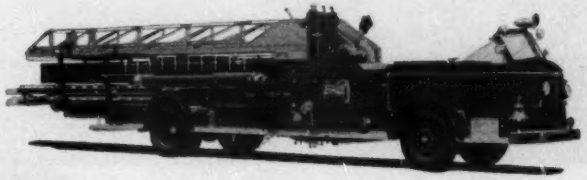


Low center of gravity permits high speed turns with safety.

Hydraulic levelling device, optional extra, for operation on steep grades. Before levelling on 10% grade.

Ladder levelled with truck on 10% grade. A single control for quick and positive levelling up to 15% grade.

Quintuplet—Available with 65', 75', 85' or 100' all steel aerial. Pump capacities available in all I.A.F.C. ratings.



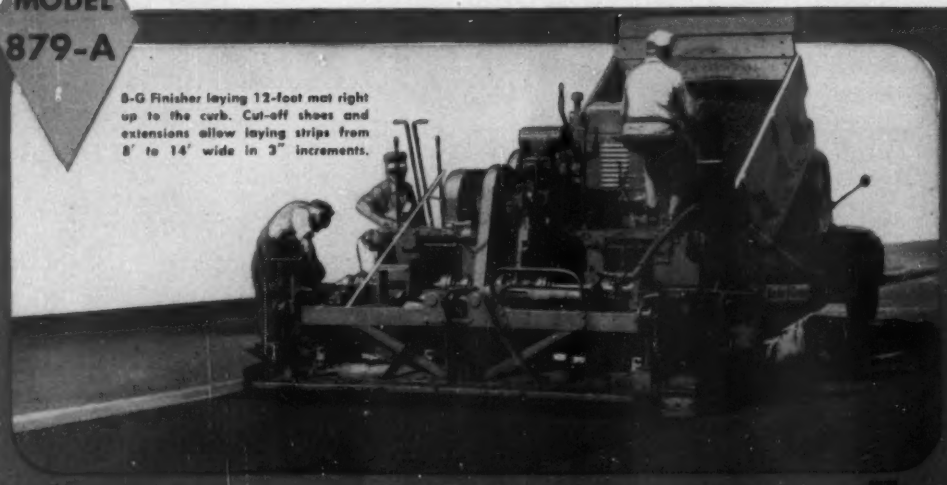
Tractor drawn aerial—85' or 100' all-steel aerial ladder.

The ninth in a series of advertisements giving the EXTRA VALUES in American-LaFrance fire engines.

Barber-

TAMPING-LEVELING FINISHER

MODEL 879-A



B-G Finisher laying 12-foot mat right up to the curb. Cut-off shoes and extensions allow laying strips from 8' to 14' wide in 3" increments.

SPREADS material evenly
COMPACTS to uniform density
LEVELS automatically without forms

Unequaled method for properly laying a smooth, level surface for paving streets, highways, runways, parking lots, tennis courts and similar jobs.

The world's most widely used paving machine: gives superior performance in laying every type of surface—hot or cold—from clay stabilized gravel to high-type sheet asphalt.

Tamps, levels and strikes off simultaneously: *automatically* measures the correct amount of *compacted* material, produces a level surface that is maintained under rolling and traffic.

Compacts material as it is being laid: while it is hot and workable—assures a superior surface of uniform density, even when laid over an irregular subgrade.

Whether paving over new subgrade or resurfacing existing pavement, the B-G leveling principle assures a smooth, ripple-free surface without the need of forms . . . abrupt changes in subgrade cannot change the grade line of the mat.

High capacity with low maintenance: saves truck time, reduces the amount of rolling required and size of crew.

see your B-G distributor

Greene

offers matchless advantages

. . . IN DESIGN

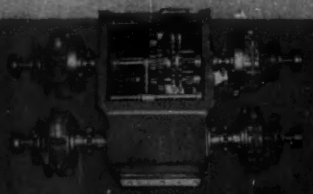
Basically, the B-G Finisher is two separate units, the tractor unit and the screed unit. This means that the entire traction and weight are on the base ahead of the material being laid, *with only the ironing screed riding the new pavement.* This dual-unit design also produces the exclusive B-G leveling principle that assures a smooth surface regardless of variations in the subgrade.

Screed is adjusted at either side for a given mat thickness, crown and for matching previously laid mat as required. Then as the crawlers travel over the uneven subgrade to a higher level . . .

. . . leveling arms automatically tilt screed bottom up, but with considerably delayed action. As a result, the subgrade irregularity is minimized . . . abrupt changes in mat thickness are mechanically impossible.

. . . screed bottom will travel up to a renewed horizontal position, but delayed action produces an almost imperceptible change in the finished surface.

. . . IN CONSTRUCTION



Precision-cut gears and heavy shafts deliver positive power transmission to flight conveyor, spreading screws and crawlers. Finisher can push fully loaded trucks and tractors, up on 8% grade. Four split-band friction clutches provide instant response and control over every phase of operation. Gear housing is fully enclosed, readily accessible for inspection.

Underframe of the Finisher shows wide 10" crawler treads that give adequate traction and positive steering control. Notice the two independently operated flight conveyors on the 5-ton hopper floor that feed material the full width of the spreading screws. Operator can feed both sides evenly, feed more to one side or stop either one as required.

Covered gearbox with chain drives assembled for the crawlers and flight conveyors on bottom of feeding hopper. Gears, clutches, and drives are all assembled as one unit which is welded to the tractor frame for perfect alignment and rigidity. Rugged sub-assembly construction helps give the B-G Finisher matchless durability.

send for interesting folder

. . . that fully describes the operation of the B-G Finisher, and the unique principles responsible for its matchless performance. 210

BARBER-GREENE COMPANY
AURORA, ILLINOIS, U. S. A.

NOW A SELF-CLEANING DIATOMITE FILTER FOR ANY LARGE VOLUME WATER REQUIREMENTS

SPARKLER Model SC *completely cleans itself in just a few minutes*

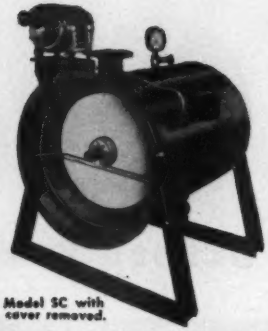
The Sparkler Model SC filter is ideal for swimming pools, municipal water systems, or large industrial uses because it provides a low-cost, self-cleaning means of filtration that meets the most exacting requirements for health and purity.

On the installation pictured here—a typical swimming pool—recirculated water from the 368,000 gallon pool consistently tests as class A—suitable for drinking. Both Enterococci MPN count and coliform MPN count are always less than 3, despite the fact that the pool carries a very large load of swimmers daily.

In the Model SC, which is a diatomite filter utilizing hollow discs covered with prefabricated media as the filter element, design and construction eliminate by-passing and channeling. Cleaning of the filter is accomplished by a simple but positive mechanical means that employs an opposed set of nylon brushes to clean both sides of each disc. Then, only a minimum amount of wash water is needed to carry away the discarded cake.

Model SC filters are available in sizes from 15 sq. ft. to 300 sq. ft. A Sparkler Field Engineer will be glad to discuss your particular problem with you.

Write for detailed information and typical plans.



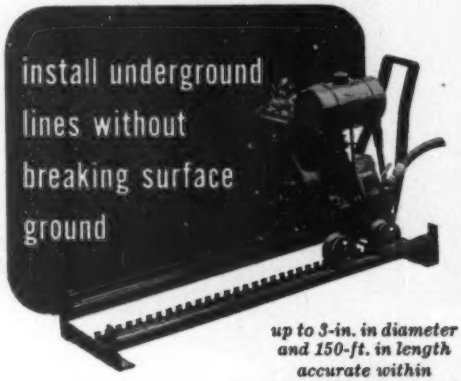
Model SC with cover removed.

368,000 gal. pool at Red Wing, Minn., equipped with Model SC filter operating on a one week cleaning cycle. Entire installation is in 13' x 17' area.

SPARKLER MANUFACTURING COMPANY

Mundelein, Illinois

Manufacturers of precision filtration equipment for more than a quarter of a century.



up to 3-in. in diameter and 150-ft. in length accurate within 1-inch of target area!

FOR WATER, GAS, SEWER, TELEPHONE, TRAFFIC SIGNAL AND MANY OTHER TYPES OF LINES!

Bore a 3-inch hole at 1½ f.p.m....with automatic warning of underground hazards. The EARTHWORM bores 1000 feet of underground line per gallon of gasoline. Use pipe or conduit as drill stem sections and leave as permanent installations. Save pavement and labor...save thousands of dollars per year...with the proved-in-the-field advantages of EARTHWORM!

IMMEDIATE DELIVERY! SEND FOR DETAILS!

LUBE-JACK CO.

P.O. BOX 1100
Santa Monica, California

WORTHINGTON-GAMON

LIQUID METERS

All Sizes All Types

WORTHINGTON-GAMON METER DIVISION

Worthington Pump and Machinery Corp.
296 South Street Newark 5, New Jersey

THE MEMBERSHIP OF A DISTINGUISHED CLUB...

C.I.P. Century Club now has 38 Members

The Cast Iron Pipe Century Club is probably the most unusual club in the world. Membership is limited to municipal, or privately-owned, water and gas supply systems having cast iron mains in service for a century or more.

Although the Club is formally constituted, there are no dues, no regular meetings, and no obligations other than to inform the Recording Secretary if and when the qualifying water or gas main is taken out of service, or, sold for re-use.

In spite of the unique requirement for membership, the Club roster grows, year by year. And why not, when a survey sponsored by three water works associations, indicates that 96% of all 6-inch and larger cast iron water mains ever laid in 25 representative cities are still in service. And when answers to a questionnaire, mailed to gas officials in 43 large cities, show that *original* cast iron mains are still in service in 29 of the cities.

If your records show a cast iron main in service, laid a century or more ago, the Club invites you to send for a handsome framed Certificate of Honorary Membership. Address Thomas F. Wolfe, Recording Secretary, Cast Iron Pipe Century Club, Peoples Gas Bldg., Chicago 3, Illinois.

CAST IRON

CLUB ROSTER

DEPARTMENT OF WATER AND WATER SUPPLY
City of Albany, New York
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THE HARTFORD GAS COMPANY
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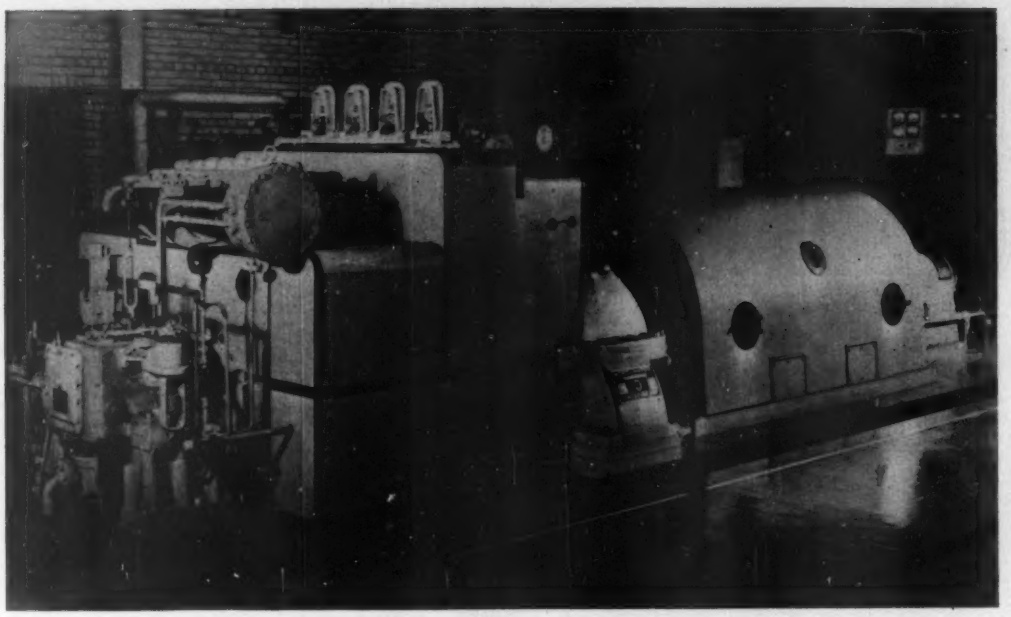

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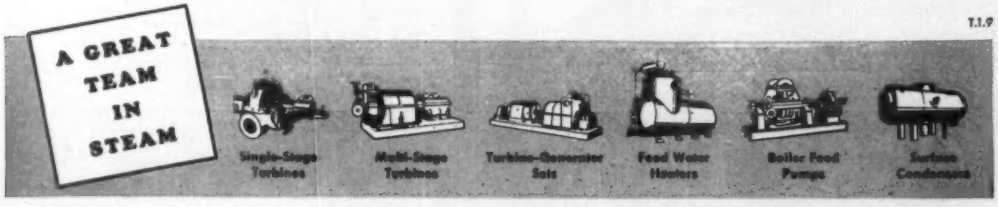

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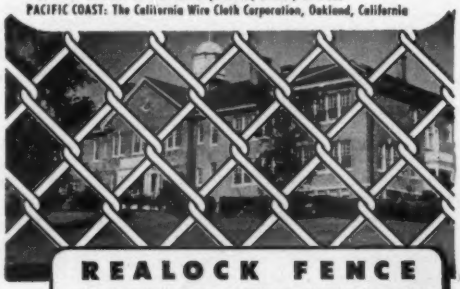

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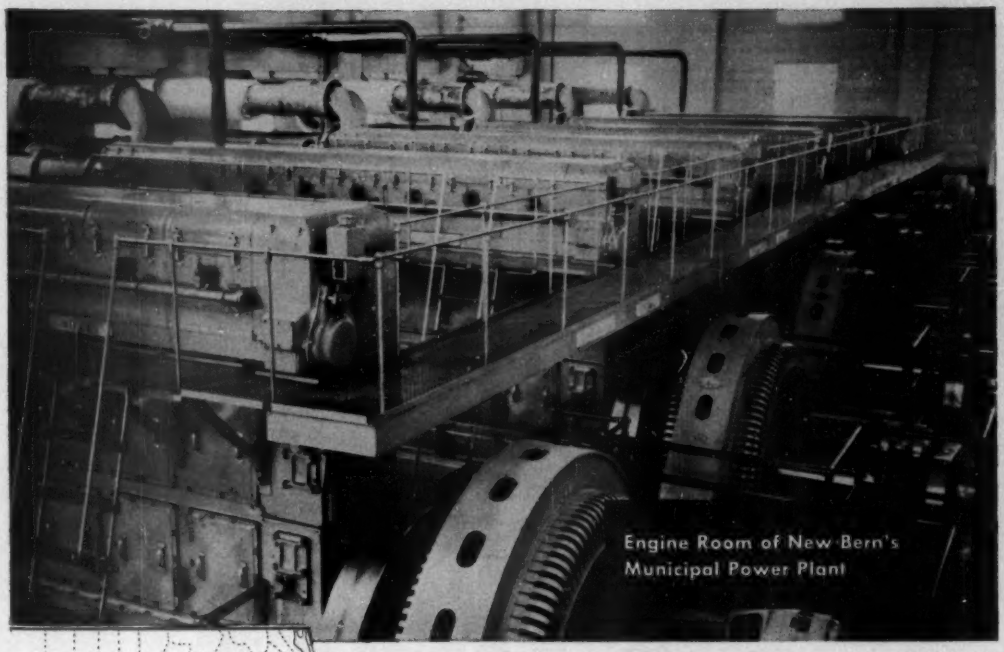

Engine Room of New Bern's Municipal Power Plant

New Bern Installs SIXTH Superior Diesel to meet increased power demand

New Bern's growing population made so many demands on the municipal power supply that city officials had to increase the plant's capacity by 20%, less than three years after it was originally placed in operation.

The decision to add another Superior Diesel was a logical one because the service records of the original five Superiors had confirmed the promised economies in fuel cost and maintenance expense. The sixth unit is an 8-cylinder supercharged engine developing 1440 HP and directly coupled to a 1000 KW generator.

In the performance records for power generation throughout the U.S.A., there's conclusive proof of the economy and dependability you can expect from an investment in Superior or Atlas Diesels.

Superior ENGINES

ATLAS Imperial DIESEL ENGINES

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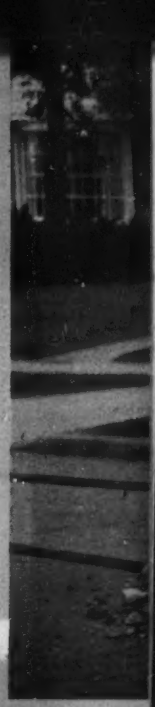
LE ROI

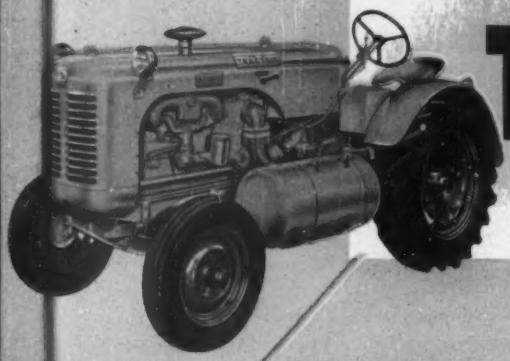
Le Roi gives you more for your MONEY!

more versatility
more profits

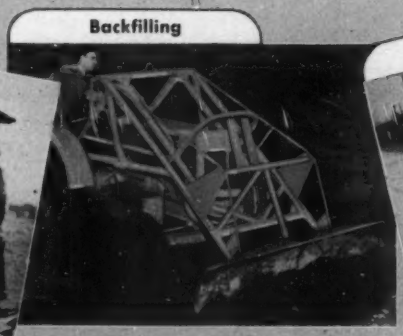
Combination bucket and crane boom. Crane boom folds back out of way when not in use. Bucket holds 10½ cu. ft. — lift capacity 1000 lbs. Crane lift capacity 800 lbs.



TRACTAIR



Tractair Mobildrill — a compressor and wagon drill in a single, self-contained, self-propelled unit. Universal mounting and swinging boom permits drilling at any angle. Drilling is easier and faster thanks to Le Roi-CLEVELAND air feed.



Loader with backfill blade in place of bucket. Width 6', mold board height 2'8", maximum lift above ground 1'4".

Trac-Jac consists of a Le Roi-CLEVELAND air-feed sinker drill mounted on Tractair. Feed and drilling controls are within easy reach of the operator. The mobility of this unit makes it ideal for mud-jacking and many other applications.

Here's a 105 Tractair getting the utility of air power to work. It is running two 80-lb. Le Roi-CLEVELAND [illegible] breaking job is done, Tractair swaps up with its front-end loader. Tractair can be used also to run hard-hitting, easy-handling Le Roi-CLEVELAND sinker drills, clay spades, backfill tampers. Moderately priced Tractair does the work quickly and pays for itself out of savings.

—Money-saving Handy Man

Combines air power and horsepower to give you greater utility for lower costs

HERE'S air power — 105 cfm — that really gets around! Good traction, low center of gravity, and Tractair's 35-hp engine give you outstanding mobility — self-propelled mobility that doesn't tie up trucks and men; mobility that saves you time and money.

That's why Le Roi Tractair can take air power anywhere any time. That's why you can make more use of work-saving Le Roi-CLEVELAND air tools to cut your costs further.

Just add a front-end loader (with its 8 quickly interchangeable accessories) and you multiply Tractair's usefulness. Not only will it handle breaking, clay digging, drilling, and tamping; but also loading, lifting, backfilling, snow-plowing, etc.

Yes, Tractair is a money-saving handy man. Watch one work — you'll see why. Make arrangements with your nearby Le Roi distributor. A new Tractair loader bulletin and job-data sheets are available. They show how Tractair saved money for others. Just write for them.

T-14

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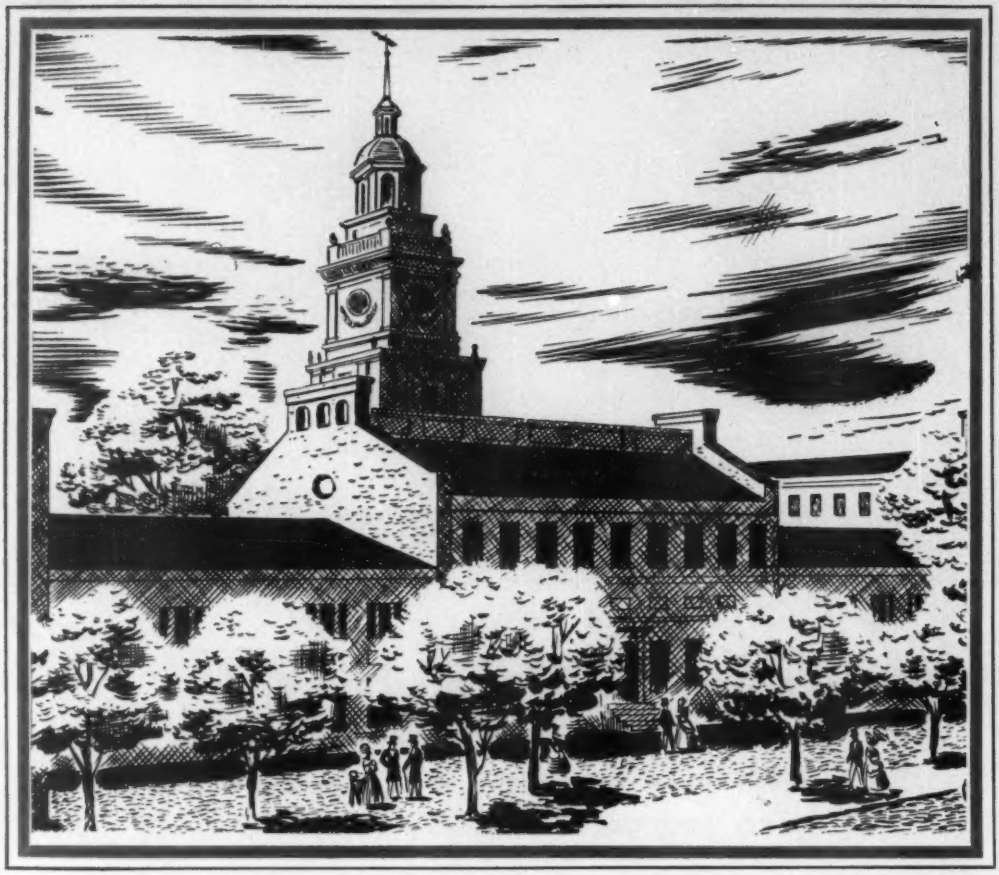

Philadelphia's Independence Hall, where the Liberty Bell is housed, as it looked 100 years ago

Philadelphia has cast iron water and gas mains in service that were laid well over a century ago. One of them is America's oldest cast iron water main, still functioning despite the radically changed conditions of street traffic and underground utility services in 100 years. The fact that cast iron pipe, laid generations ago, withstands the shock of heavy-duty traffic and the stresses caused by congested underground structures, amply demonstrates its shock-strength and beam-strength. Because of these strength factors and effective resistance to corrosion, cast iron water and gas mains, laid over 100 years ago, are still serving in the streets of more than 30 cities in the United States and Canada. **United States Pipe and Foundry Co., General Offices, Burlington, N. J. Plants and Sales Offices Throughout the U. S. A.**

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On jobs like this, and hundreds of others, this pair of exclusive Austin-Western features works as a team to do better work, and more of it. A profusely illustrated catalog which tells the whole story is yours for the asking.

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"90° above or sub-zero, we can rely on our HEIL Dump Units

to meet any emergency of street and highway repairs and maintenance"

—says Louis H. Dillenburg, highway commissioner, Shawano Co. Highway Dept., Shawano, Wisconsin.

★ Heil reinforced body can't sag!

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★ Heil design saves weight — permits bigger loads!

Many an official agrees that Heil Bodies and Hoists pay out in public service. Fifty years of experience equip Heil to build dump units that stay on the job with less maintenance and repair expense.

There's a Heil unit that meets *your* requirements. Heil hoists fit any truck chassis. Hoisting capacities range from 8,000 to 90,000 pounds. Heil bodies are available in all popular sizes.

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"Scott Air-Pak is the best mask equipment available, because it completely protects the firemen's lungs, without any penalty of slow starting or difficult breathing."

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"I'm recommending more Scott Air-Paks, because we're determined to make our firemen safer and reduce our property losses. Our use of even a few Air-Paks has proved what can be accomplished."

Scott Air-Pak (TRADEMARK) invites you to

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A FIREMAN WITH 25 YEARS SERVICE

"I'm sold on Scott Air-Pak, (and I've used them all) because Scott has not forgotten the little things that count, like the guard on the Cylinder Valve; the wonderful quick-action Harness, and the easy and positive breathing action. All of our boys have complete confidence in the Air-Pak."

A FIRE CHIEF

"I'm standardizing on Scott Air-Pak, because their use is enabling my men to get in quicker; do more when they get in; and often knock out a fire with little water or structural damage. When we can equip *more* of our men with Scotts, we can do an even better job."

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"I have the operating cost record of our Scott Air-Paks. We saved money last year by using Scotts, in spite of the fact that we've used them *much oftener* than our previous breathing equipment. No Cannisters to buy. Air is relatively cheap. When the Chief asks for more Scotts, I'll sure approve."

Write today for descriptive literature on Scott *Air-Pak* (illustrated above) and Scott DEMAND Oxygen Inhalator.

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Canada: Safety Supply Co. Branches in All Principal Cities
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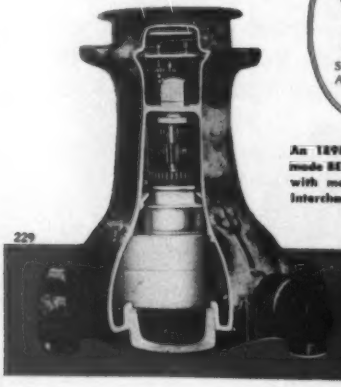
Accuracy

Photo taken in large meter repair shop.



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But more than that . . . Trident modern interchangeable parts are not only accurate in finish. They are so much better in design and operation, they actually make even 50-year-"old" Tridents BETTER THAN WHEN NEW . . . meeting today's standards for accuracy. Thus Trident Meters undergo no depreciation in Accuracy, nor in Value. In short, Trident Meters don't become obsolete.

229

By FRANK H. BURNS
Fire Chief
Grand Rapids, Mich.

New Apparatus and Close Inspection Drop Fire Losses in Grand Rapids

THE per capita fire-loss record of Grand Rapids (1950 population, 175,647) during the last three years has shown a favorable trend which can readily be explained by an extensive reorganization and replacement program in 1946 and 1947.

Very little fire-fighting equipment was bought during the depressed '30's, and then came the war. By 1943, the average age per motor unit, not including fire chiefs' cars, was 14.1 years. In the 12 years from 1930 to 1941 inclusive, fire losses averaged $1.37. In only one of those 12 years did fire losses exceed $2 per capita, and the figures for 1932 to 1935 were 67 cents, 88 cents, 42 cents, and 77 cents.

During the war years, with aging apparatus, the picture changed: $1.84 in 1942, $3.74 in 1943, $3.67 in 1944, and $2.47 in 1945. Since then, the relationship between age of apparatus and per capita fire losses has been as follows:

	Average Age In Years	Per Capita Fire Loss
1946	14.1	$3.00
1947	12.5	5.07
1948	12.2	3.40
1949	9.0	2.29
1950	8.2	1.97

The age decline was owing to purchase of eight new units in 1945. Seven of the old pieces, fully equipped, were placed in reserve for operation by the off-shift. An aerial truck and a 1,250 gpm pumping engine are on order.

The old typewritten book of rules, long outmoded and obsolete, was replaced by a printed handbook suiting the needs of a modern fire department. All directives not included in the book of rules are now issued through numbered bulletins, each dealing with a particular subject. A new training manual describes practical evolutions and the proper method of executing each. A full-time drillmaster was installed.

With a standard training manual and a single instructor to set up a standard curriculum, our training program is much more satisfactory than ever before. It is no longer necessary to look for a hose man to do hose work and a ladder man to do ladder work; all the men have the same training and each can perform any duty of a fireman.

In addition to class subjects, so-called "battle plans" have been worked out, based on surveys made by the chief officers of all large buildings, factories, lumber yards, etc. The survey shows the proper position to be taken by first-alarm companies, as well as the positions for second-, third-, and fourth-alarm assignments, taking into consideration exposures, fire breaks, and water supply. A map of the building involved shows adjacent buildings, surrounding streets, hydrants, and size of water mains. Each unit is placed in operation on the map. These maps are placed in the hands of every company officer.

First Blows Important

To promptly get enough men and equipment to the scene of the fire and in operation is our policy. When extra equipment is called, the first district chief not engaged at the fire automatically moves into alarm headquarters and directs operations from there. Standing orders require that he call back the off-shift without hesitation when the situation warrants, thus being prepared to supply men and equipment to the fire when called upon and, also, cover all calls for fires elsewhere.

Education has its three R's, traffic engineering its three E's, firemen their three I's—Inspection, Instruction, and Investigation. In 1947, we established a bureau of inspection with a chief and three inspectors. Several new ordinances have been passed, such as the new heating code, which requires installers to be licensed; a permit to be taken out for each installation, and inspection and approval by the fire department inspection bureau. Others are the fire extinguisher code and the refrigeration code.

These ordinances and better enforcement have been factors in the reduction of fire losses in Grand Rapids over a period of years when national losses were on the increase.

When this bureau was set up, the nation was enduring an epidemic of hotel fires, with a heavy toll in lives. Our first efforts were directed to the hotels and rooming houses, and correction and improvement orders were issued to every one of the more than 40 hotels in the city. In slightly more than a year the recommendations had all been complied with. These were the requirements, by resolution of the City Commission:

1. Provide electric fire-alarm bell system on all floors.
2. Provide lighted exit signs at all points of egress.
3. Enclose stairways with fire-resistive materials.
4. Enclose and fireproof vertical shafts and openings.
5. Provide adequate fire exits and fire escapes.

These precautions should insure that

the hotel guest will, in the event of fire or any other unusual occurrence, have at least an adequate warning of danger and ample means of egress to escape from the building. These safety features do not, of course, eliminate the need for frequent inspections of those buildings to discover and remove fire hazards. Such inspections are made at least four times each year.

Efforts of the fire department inspection bureau were responsible, in some measure, for making our schools safer. The buildings were old, obsolete, and inadequate. Although the recommendations made by the fire inspectors could not be complied with in full because of a lack of funds, their report did serve notice to the citizens that something had to be done about their schools. A new survey and report made in January 1951, including recommendations on every school in Grand Rapids, was turned over to the Board of Education, with copies in the files of the inspection bureau.

We believe this second report from the Fire Department influenced a favorable vote to add two mills to our taxes for 20 years to finance the improvement and expansion program.

Improvements in Five Years

1. Two operators on duty in operating room
2. Installation of two-position switchboard
3. Installation of fire-circuit switchboard for testing boxes
4. Installation of second transmitter and the discontinuance of the repeaters, making our system a fully Class A system
5. Forty new three-fold fire boxes installed
6. Remote control for police radio to permit fire operators to talk directly with fire-department officials
7. New feed cable from #1 Engine House to #4 Engine House, 10 miles of new cable, both underground and aerial on messenger
8. Two additional fire circuits installed, making a total of 17
9. New vocal-alarm system
10. Additional ¾-ton Dodge truck, air compressor with tools, cement mixer, manhole pump, added to equipment; radio installed in two trouble cars

Whatever may be said of waste in municipal government, we don't think you'll find it in the Grand Rapids Fire Department. While the city's population has been increasing steadily from 140,000 people in 1920, to 176,000 today, the number of Fire Department employees has decreased from 276 to 257. Far from reflecting a condition of overwork, hours per week per man have decreased from 92 to 68. This reduction was brought about by extra days off, known as "Kelly" days, sick leave, and other time concessions.

Are True Values of Real Estate Really Shrinking?

By WILLIAM H. ALLEN, *Director*
Institute for Public Service
New York, N. Y.

IN THESE days of inflated prices, which are already close to double those of 1941, the role of realty assessors is too often overlooked. Even with business and taxpayer groups working for lighter tax burdens, the assessor of real estate's value for taxation is too often "the unknown soldier."

Without boasting or confessing, assessors of realty for taxation have made important decisions about the inflation era's full value of real estate.

In five cities, 16,400,000 total population in 1950, realty is taxed on the assumption that its full value per capita has fallen—with today's 54-cent dollar—from the $3,096 of 1941 to the present $2,080.

In five cities, totaling 1,560,000 in population, the drop in full value of real estate per capita is from $1,656 ten years ago to $987 today.

In five small cities totaling 337,000 in population, local officials have ruled that per capita full values have dropped from $2,466 in 1941 to today's $1,370.

The contrasts—the apparent shrinkages—are surprisingly large. If the officially claimed per capitas of full value in 1941 were equaled for realty today, the per capitas of full realty values would be almost 50% higher for the largest cities; almost 68% higher for five cities around 325,000 population and 80% higher for the five small cities of around 66,000 population.*

The names of the 15 cities are not given here, for the purpose of this report is to draw attention to a problem that seems to be nationwide. Mentioning the 15 cities only would lead too many readers and officials to say "That's their problem, not mine."

Who knows why there has been this great drop in the officially announced purchasing power of real estate in 1951 compared with ten years ago before

Some will say that the 1941 per capitas were altogether too high, due to illegal over-assessing. Others will say ceilings have blacked out values, whether owned for business or for residence. Some will suggest that heavy taxing—federal, state, and local—inevitably diminishes realty's true, full value. A few sophisticates may go so far as to hint that assessors and elected budget makers have not revised realty assessments for taxation in light of the dollar's waning purchasing value.

Whatever the cause or causes, it is obviously advisable that elected officers, budget makers, and economists find out if local real estate is being advertised as having lost purchasing value in spite of population growths and prosperity gains.

If the goose that lays the golden eggs so widely and so generously is being forced into anemia by taxation and ceilings, local statesmen and publics should know it and act accordingly.

* The record from which the comparisons above were drawn is the *National Municipal Review's* annual report of tax rates in American cities, made by Upson fellows in training for public service at the Detroit Bureau of Governmental Research. In arriving at comparable per capita full values, the Institute for Public Service took 7 steps: (1) separated personality from realty in total assessments reported; (2) computed for all cities the total full values; (3) divided full value by population for each of the three groups; (4) applied the cost of living index 180 to the 1941 per capita to find what an equivalent per capita in 54-cent dollars would be in 1951; (6) compared today's official per capitas with the equivalents of the 1941 per capitas; (7) found the percentage of difference—shrinkage—from 1941 to 1951.

EDITOR'S NOTE: The author will welcome comments or inquiries, which may be addressed to him at 5 Beekman Street, New York 7, N. Y.

Chicago Land Clearance Agency Wins Important Decision

UNITED STATES District Judge William J. Campbell has dismissed a suit seeking to halt the acquisition of blighted land in the South Side of Chicago by the Chicago Land Clearance Commission for redevelopment by the New York Life Insurance Company. In his order, Judge Campbell declared that the federal court lacked jurisdiction and that the redevelopment operation does not violate the Constitution.

Almost 85% of the redevelopment site—between 31st and 35th Streets, and between South Parkway and the Illinois Central Railroad—already has been acquired by the Commission. Most of the property was obtained by purchase.

The New York Life Insurance Company plans to erect 1,404 apartments on the 20-block site. It has also offered to build two 12-story buildings, with 238 apartments, in the block between 33rd Place and 34th Street, and between Rhodes and Cottage Grove Avenues. This plan was approved by the City Council's housing committee on June 20, and now is awaiting action by the full Council. The insurance company plans to build three additional 12-story structures in two adjoining blocks later, increasing the number of units to 600.

Is Your Fire Chief Ready

for his role in civil defense?

By EARLE M. SCOTT, *President*
Scott Aviation Corporation
Lancaster, N. Y.

YOUR fire chief is a versatile individual; he has to be. He is required, among other things, to be an advisor, educator, executive, diplomat, and one of the best public-relations men a city can have.

His natural or acquired flexibility and his ingenuity will be severely taxed in the months to come. The demands made on his experience and time during our new civil-defense programs will require infinite patience and boundless energy.

Right now your jovial fire chief may be "target man" for committees, manufacturers' representatives, federal planners, school principals, worried taxpayers, etc. As the civil-defense rush gains momentum, he'd better be an "iron man," because he'll be caught in the middle.

Our boyhood hero has been well trained for the tough assignment that may confront him soon. He's worked and pleaded for the equipment and men that cities take pride in pointing to as "the finest fire department in the country." The battle is continuous to make budgets cover needed equipment. It is more difficult, too, getting men who will take pride in learning and developing the new skills necessary to modern fire fighting and prevention. The almost nonexistent manpower reserve in our country today holds few indeed who would take the risk and undergo the rigorous training routine required of a rookie fireman. And the money—suppose we just forget to bring that subject up.

Difficult Times Ahead

Yes, the old chief has had and will have some difficult times; but then, of course, he is by virtue of training and experience generally equipped to take it. Year to year—from the time he rolls all the paraded equipment back into the station, tears up his most recent "Fire Prevention Week" speech, and gets back into harness—he has run the full gamut of talents previously attributed to him.

Suppose you city managers and municipal officials use the following check list to ascertain how ready your fire chief is. By "ready" we mean, of course, ready for his tremendously important role as the nucleus for the civil-defense program. Beyond any doubt, your fire department, aided materially by the police, will be a Number One troop for home defense. Rescue work, salvage, restoration, and much of the work essential to continued existence and war production might conceivably fall on the chief and all the chief's men.

How does your fire chief stack up?

1. Is he in good health?

The answer to this question is easily determined. A trip through a local or near-by clinic can serve to put your minds at rest or point out the necessary medical attention required to insure the chief's continued efficiency.

2. Is the department well organized, so that his subordinates can efficiently run it while the chief plans, deputizes, and supervises?

Much depends on the support he has received from the city fathers in the preceding year. With adequate annual budgets and the cooperation of progressive city planners, chances are the department is basically fairly well set. Unfortunately for many cities, antiquated and insufficient equipment, plus demoralized firemen, pose a real problem. If this is true of your town, and your town is contiguous to a strategic area, you'd better start some constructive planning *now*.

Many city officials have found that more efficient fire departments have resulted from placing chiefs and their deputies under civil service regulations. Morale is strengthened when chiefs are able to suggest necessary improvements without fear or favor. The Board of Fire Underwriters often recommends the inclusion of fire department heads under these regulations—the object being better departments.

3. Is he adequately paid?

Financial and personal worries have done more to undermine the health of men in all professions than all the diseases known to medical science. So, here is an immediate solution within the control of the municipal government, which might have a tremendous bearing on whether or not the chief is able to ride the merry-go-round for which world conditions have bought him a ticket.

Traditionally short on salary and expense money, and facing the same inflationary ills that all of us are heir to, the fire chief's frequent attendance at civil-defense meetings and the like will have him dipping into his own pocket for expense money faster than he can write personal checks against a rapidly shrinking bank balance.

He will incur many little personal expenses in organizing volunteer workers and in selling them on civil-defense work. In order to keep up the pace, he will find it necessary and expedient to resort to short cuts, which will take *more* personal money, most of which is not allowable as expense items. If the chief's personal budget is already strained, the additional burden may be intolerable. So, at a time when the demands on his time and talents have him going in circles—when his every thought should be on the organizing and correlating job before him—he may be desparately trying to figure out just how to pay the butcher and meet the current mortgage payment.

A Number One Man

So, if you would speed up our nation's defense machinery, give plenty of thought and prompt action to conditioning *a number one man* on the home front.

Our national safety is in great peril. Sober realization of the possibility of dreadful eventualities should accelerate the completion of our civil-defense program. In each city and town the number one spot is the city fire department. And heading this important salvage and rescue group is your chief. Unless he is ready, your defense will not be ready.

How About Your Fire Chief's Salary?

Suggested recommended minimum-salary schedules for fire department chiefs as determined by a committee appointed by the International Association of Fire Chiefs and reported January 1951; and actual mean average salaries as reported in the 1951 Municipal Year Book:

Population of the City or Town	Recommended Minimum Salary	Actual Average Salary
500,000 or more	$11,000	$9,878
250,000 to 500,000	9,000	7,288
100,000 to 250,000	7,500	5,871
50,000 to 100,000	6,500	5,244
25,000 to 50,000	6,000	4,495
10,000 to 25,000	4,500	3,823
10,000 or under	4,250	.....

Norfolk's recently completed ground-storage tanks, each with a 6,000,000-gallon capacity.

How Norfolk Is Solving Its *Water Problem*

By R. T. NICHOL
Administrative Assistant to the City Manager
Norfolk, Va.

This pipe is part of the new 48-inch transmission line through which water from the city lakes will be carried to the purification facilities.

FOR TEN YEARS, the country's first order of business has been war, uneasy peace, and once again military mobilization. During this period, metropolitan Norfolk with its splendid harbor, shipyards, and huge naval base experienced a population increase of 57%.

Needless to say, the level of municipal services in some instances stayed far behind the actual need. To correct the numerous inadequaces, city and state officials in 1946 embarked on a $130,000,000 ten-year capital-improvement schedule.

Outstanding among these inadequacies was an insufficient water supply. In 1940, Norfolk citizens were using 16,000,000 gallons of water each day. In 1945, however, the demand averaged 36,000,000 gallons daily. As if the continuing increase with no corresponding increase in water facilities was not enough, summer droughts threatened to dry up the reservoirs. Because of these facts—plus constantly rising construction costs — citizens, councilmen, and officials agreed that immediate action was necessary.

What Should Be Done?

In 1947, the consulting engineering firm of Whitman, Requardt, and Associates, of Baltimore, was employed. A year later, these engineers delivered a "Report on the Water System of Norfolk" to the City Council. This report showed that Norfolk was using 90% of its available capacity, and that only a 4-mgd margin existed for droughts, water emergencies, or normal population increase.

Moreover, the report established the fact that there was ample water for

many years in Norfolk's watershed—that the system's deficiency was mechanical in nature and involved such things as inadequate transmission and purification facilities.

The report closed with specific recommendations which, if carried out, would increase available water capacity from 40 mgd to 51 mgd. Assuming normal population and no World War III, this should insure Norfolk citizens an adequate water supply until 1975. The price tag was $13,000,000.

Recommended in the report were a new $1,600,000 purification plant, and a large 48-inch transmission line between the city lakes and the purification facilities. These were the major recommendations. Minor recommendations included cleaning the lining of the distribution system, additional storage facilities (ground and elevated tanks), pneumatic conveyors for chemical handling, conversion of steam pumps to electrical operation, a new billing system, and office modernization. In all, the recommended program contained 12 separate items.

With the facts and a $13,000,000 solution before them, the city councilmen were faced with the task of selling this program to their constituents. The Council by itself could have adopted the program, but it decided that it was desirable to conduct a general referendum on the plan. For one thing, a very heavy expenditure was involved. Moreover, if the program was approved by the electorate, the bond issue would not be counted against Norfolk's legal debt limit.

How Approval Was Secured

The Council found its answer to this public-relations problem by appointing a committee of 50 business, civic, and social leaders who agreed to accept the promotion responsibility. After receiving technical orientation from the Council, the city manager, and the engineers, the citizens' committee organized speakers' bureaus, radio and press coverage, and personal-contact work. This committee pushed across the first half of the program ($6,500,000) in 1948, and though the public's vote was light, the majority was 4 to 1. In December 1950, the second half of the program was successfully promoted by a similar committee and the project carried by a 10 to 1 majority.

Construction Start

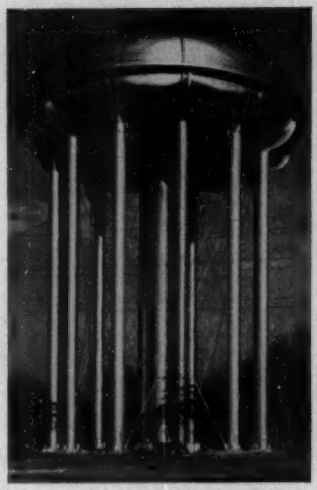
Actual construction began in 1949 and will be completed in 1953. Accompanying photographs indicate the progress to date.

The 48-inch transmission line will consist of Lock-Joint reinforced concrete pipe. The line will make a submerged river crossing using 42-inch diameter, flexible-type joints. It also will make a river crossing above water, using steel pipe supported on concrete pile bents.

The filter plant will have 12 Omega dry-chemical feeders. Four will handle lime; four, alum, and four, activated carbon. It will have six chlorinators that will provide pre- and post-chlorination.

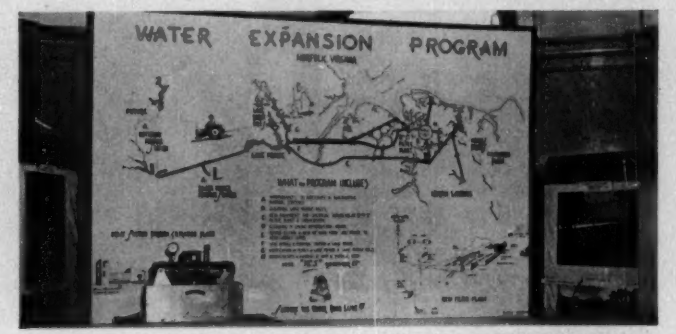
Program Supervision

Norfolk's water-expansion program has been carried out under the direction of City Manager C. A. Harrell; Director of Public Works H. H. George, III, and Superintendent of Water R. W. Fitzgerald. The chairman of the 1948 Citizens' Committee was Alan J. Hofheimer; Herbert A. Nash was chairman of the 1950 Committee.



One of two elevated storage tanks, each of 1,000,000-gallon capacity, constructed within the last year.

PHOTOS BY PHOTO CRAFTSMEN, INC., NORFOLK



This exhibit was displayed in the lobby of City Hall during the week preceding the referendum conducted in Norfolk for the acceptance of the water-improvement project. On the poster, "What the Program Includes," is listed the second half of the total program. An engineer on duty with the exhibit explained the undertaking in more detail to passers-by who were interested.

This is the early construction work on the new $1,600,000 filtration plant; the building is located on the outskirts of the city, at Moores Bridges.

New sewage-treatment plant will protect valuable salmon-fishing areas

Tacoma Cleans Up Puget Sound

By JACK ROBERTS
Commissioner of Public Works
Tacoma, Wash.

PUGET SOUND cities have for years occupied an enviable position among American communities from a standpoint of sewage disposal. Fronting on deep waters with swift underwater currents, disposal was simple and economical. The Sound cities merely ran trunk sewers into the water, letting the tidal currents dilute and disperse the sewage.

Such a situation existed at Tacoma, located along the shores of Commencement Bay, which is a deep-water harbor two miles wide and three miles long, with the Puyallup River discharging into the upper end. Considerably more than half the city has always discharged its sewage into the upper end of the Bay, leaving little chance for adequate dilution. The remaining portion has been discharged through trunk lines along the outer shores, where currents are swift.

New Plants Being Built

In the past decade, however, the Sound cities, Tacoma and Seattle particularly, experienced some of the nation's heaviest population increases. Today, more than a million people live in the Puget Sound coastal area, and with this growth continuing, these cities are now turning toward the construction of sewage-treatment plants.

Much of this need was spurred by efforts of disposal engineers, both municipal and state, who years ago began an educational campaign to interest city officials and voters in the need for proper disposal. In this they were aided by a powerful and vociferous group, the Puget Sound sportsmen, who jealously protect some of the finest salmon-fishing grounds in the nation.

In 1944, this combination aided passage in Tacoma of a $3,000,000 bond issue that included, in addition to construction of a system of trunk sewers, a $1,300,000 treatment plant. Its completion this year will give Tacoma's 142,000 inhabitants the largest and most modern sewage-disposal plant in the Puget Sound area. A smaller disposal unit is scheduled for early construction in Seattle, and plans have been made for additional plants in other Sound cities.

Plans for the Tacoma unit were completed only after a long series of preliminary surveys. These included studies of the currents and the dissolved oxygen and other factors affecting sewage disposal in Commencement Bay, together with analysis of the flow in existing sewers. A weir with a recording gauge was installed at the discharge of the largest trunk sewer. Upon completion of two years of observation it was found that the average flow in this line was approximately 660 gallons per capita per day, as compared to a normal design flow of 100 gallons per capita per day. This abnormal infiltration is no doubt the result of poor early-day construction and the deliberate diversion of underground streams into the trunks. In considering these factors, therefore, it was necessary for engineers to design a disposal unit that could handle 27,000,000 gallons per day. Original plans called for a 10,000,000-gallon capacity.

With their backs to the camera, surveying the excavation and pile-driving work of Tacoma's $1,300,000 new sewage-disposal plant, are (left to right) W. W. Hoagland, general contractor; N. H. Daniels, engineer with the Hoagland-Findley Engineering Company, and C. S. Seabrook, Superintendent of Sewers.

The tests were conducted by our own sewer department, under the direction of Superintendent C. S. Seabrook, assisted by Professor R. G. Tyler, of the University of Washington, and Clyde C. Kennedy, consulting engineer, of San Francisco. Mr. Kennedy was also retained to design and prepare all plans, with the exception of those for the pumping station and administration building, which were designed by our own office.

The disposal plant being constructed is located adjacent to the Puyallup River levee, approximately a mile upstream from Commencement Bay, on which the "Northwest Lumber Capital" lies. It will purify sewage from approximately half of the city sewers. The remaining sewage is carried into the outer reaches of the Bay by eight recently remodeled deep-water outfalls, installed at a cost of $410,000.

The Puyallup River disposal plant

was given top priority in the over-all disposal problem, since it will replace outfalls that have been discharging into the relatively quiet waters of the head of the Bay.

The plant proper will consist of a pumping station, a Parshall flume to measure the sewage, sedimentation tanks, digesters, a chlorine diffuser, vacuum filters, elutriation tanks, and grit-removal devices.

The pumping plant will be housed in the administration building, which will accommodate the office, laboratory, lunch room, toilet facilities, and chlorine-storage room. Among its features is a Mine Safety Appliances Company gas-detecting device which will be installed in the incoming sewer. It will not only sound an alarm, but will actuate a supplementary blower in the wet well of the pumping station should any obnoxious gases come down the sewer.

The pumping station will be equipped with four Morris Machine Works' pumps, 4,000-gpm, 6,000-gpm, 10,000-gpm, and 2,000-gpm, respectively. These will be connected to cut in and out automatically as required, and will be powered by Westinghouse motors ranging from 50 to 125 hp.

A rectangular grit chamber with Link Belt grit-removal equipment is used at the plant. Two 50-gpm, 3-hp Allen-Sherman-Hoff grit pumps will transfer the grit to the disposal area, where it will be washed by an inclined screw conveyor. Coarse solids will be removed from the sewage flow by a self-cleaning Link-Belt bar screen, and will be macerated in a Gruendler grinder and then returned to the sewage flow.

The sewage will proceed to four rectangular sedimentation tanks 75 feet wide and 185 feet long equipped with Link-Belt sludge-removal equipment. Two Hoffman air blowers, each rated at 1,250 cubic feet per minute, supply pre-aeration through Process Engineers, Inc., air diffusers. Nine Marlow sludge pumps will be employed to transfer the sludge from the tanks to the digesters. There will be two digesters, each 75 feet in diameter. One will have a Pacific Flush Tank floating cover. The sludge will be brought to optimum temperature by an external Pacific Flush Tank heat exchanger.

Elutriation

The digested sludge will be elutriated prior to vacuum filtration. This elutriation, or washing in fresh water, makes it easier to dewater on the vacuum filters. There are two of these filters, each 5½ feet in diameter and 4 feet long, supplied by Oliver United Filter Company.

The plant will provide post chlorination through two Wallace and Tiernan 3,000-pound chlorinators.

The dewatered sludge will be removed by a Link-Belt filter-cake conveyor. A brisk demand for the filter cake is anticipated, since Tacoma is located adjacent to rich vegetable, berry, and bulb lands.

The plant will be equipped with a Rauland intercommunication system with stations placed at strategic points. It is felt that the time saved and the safety potential represented will be well worth the cost of the installation. As it is being constructed at this time, the plant will serve a population of 100,000, with ample ground space for doubling this capacity.

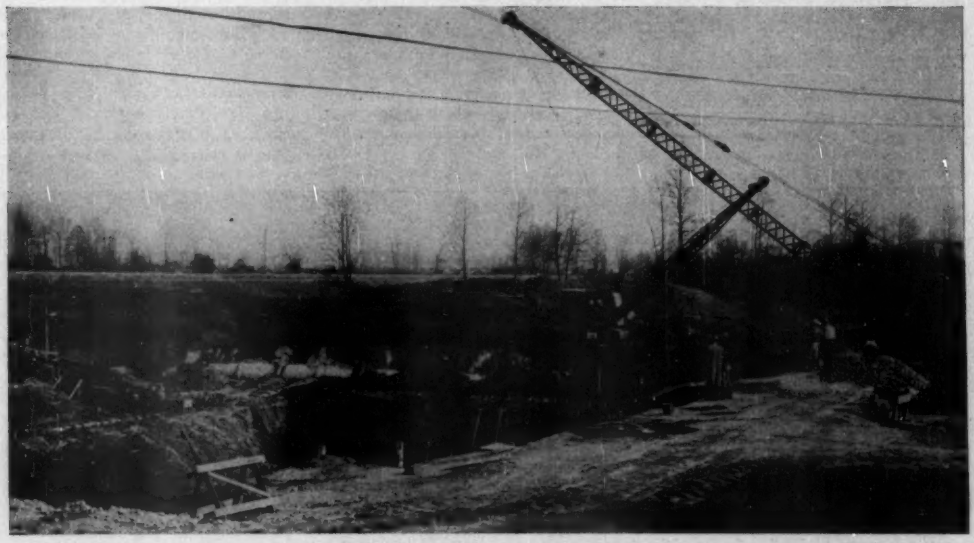
Only the sewage from the south part of the city will be treated at the plant. The newly remodeled deep-water outfalls will care for the rest.

Outfalls

Of less expensive design, but posing interesting engineering problems, was the construction of eight submarine outfalls to serve that portion of the city not connected with the disposal plants. The problem was to extend the old outfalls some 600 feet farther out into the upper end of the Bay to a depth of 40 feet below mean low water, where currents are adequate for proper dispersion,

The project was carried out by Industrial Engineers and Contractors, and Walter McCray Divers Company, both local firms. The design of the outfalls called for the construction of pile-supported undersea rail tracks to provide a firm, permanent support for the heavy concrete outfall pipes. The pipeline was laid in a trench previously excavated in the bottom of the Bay so that, on completion, the line was covered and thus protected from physical damage.

The sewer system was placed on a utility basis early this year to finance operation of the plant. Sewer charges are based on 25% of the current water bill with a minimum charge of 75 cents per month. An annual return of $250,000 is anticipated.



Deep excavations are being made here for the new plant. In the left background is the Puyallup River levee.

Tomorrow's Street—

should it have a "valley" gutter?

This discussion indicates that it should—and tells why

THE ever-increasing travel on rural and urban highways is taxing the ingenuity of the designer to construct adequate roads which will be satisfactory to the traveling public at a minimum of expense. The advent of the high-speed motor vehicle has created the necessity for riding surfaces far superior to those suitable for horse-drawn vehicles.

While science has provided the designer with a choice of materials—cement, asphalt, and tar—the basic principles of design have undergone little change. The Romans knew the importance of foundations for roads. Remnants of their roads in France and England indicate foundations of graded materials up to three feet in depth, with the surface of the road raised above the surrounding terrain to facilitate drainage.

John Macadam and Thomas Telford, in the latter part of the 17th and the early 18th Century, constructed many roads in England and developed theories which even today are followed. Macadam believed that if a road made of suitable materials is well drained, it could be laid in the natural subsoil and would not require a costly stone-paved foundation. He was the first road builder known to advocate a substantial crown to throw off water. He recommended and used a broken-stone base with the individual stones approximately one inch in diameter. The macadam road of today is a tribute to the sound thinking of John Macadam.

By JOHN C. KEEFE
City Engineer
Northampton, Mass.

Thomas Telford was one of the first to recommend the construction of a heavy-stone base with uniform stones. He used stones measuring approximately 7 inches, placed side by side in the base as close together as possible. This base was covered by 6 inches of smaller stones with a top dressing of 2½ inches of gravel or small stone. Telford also crowned his roads to shed water to the side. There are many roads in this country today constructed with a Telford base. Except for the crowned surface the Telford method was quite similar to that recommended by Tresaquet, a French designer in the latter part of the 17th Century.

Macadam and Telford clarified for the first time the principles of road building: (1) adequate drainage and (2) suitable foundations. They gained world renown because of the success of their roads and through the publication and adoption of their theories.

Contemporary Problems

However, the automobile has presented problems to the designer that did not confront Macadam and Telford. When horse-drawn vehicles pass along the road the motive power is supplied by the horse. The wheels of the wagon move as the horse pulls, and having no motive power of their own, the pressure against the road is mainly downward as the horizontal thrust against the road is dissipated. The motor vehicle, however, derives its motive power from the rear wheels and these wheels not only exert a downward pressure, but also a horizontal pressure which tends to destroy the road surface. Horse-drawn vehicles can also make sharp turns not possible with a motor vehicle.

New Design Needed

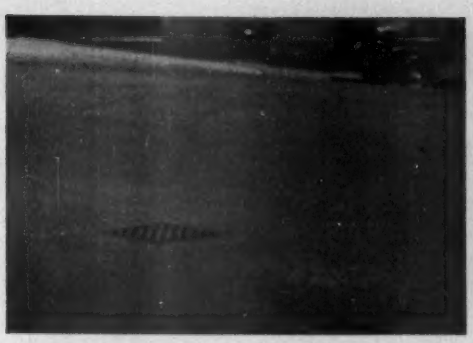
It therefore became necessary for the designer to create a surface that would not be destroyed by the motor vehicle and to study the elimination of sharp curves.

The innovation of underground drainage has offered wide possibilities for the designer to stabilize road foundations and eliminate deep and expensive foundations in wet soils. Many soils which are extremely poor for road construction when wet have a high soil-bearing factor when dry. The purpose of the underground drain is to keep the soil dry so that the designer may safely use the high soil-bearing factor and eliminate excessive foundations.

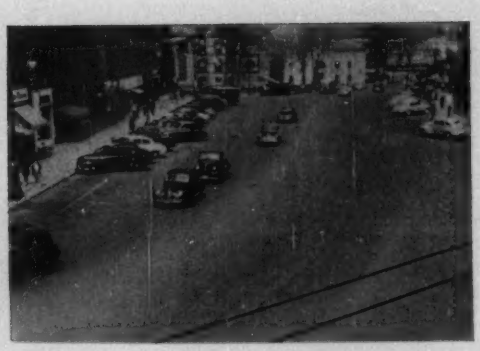
Today's designer of municipal streets has two devices that were not available to Macadam, Telford, and the Romans: (1) underground drainage and (2) the materials produced by science. With these advantages, it is my belief that the conventional road design on municipal streets, especially in northern climates, is outmoded, and should be revised when new streets are built and old ones reconstructed. The traveling pub-

This illustrates a frequent gutter-drainage problem. The gutter is partly blocked to improve the driveway entrance.

A pipe in the gutter under the drive aids drainage. Although this helps some, it also creates a road hazard.



Center drainage is simple. This catch-basin, typical of those installed in Main St., offers no traffic obstruction.



Center drainage does not interfere with the street's appearance. There are three such drains in this street.

lic today demands and expects to find good traveling conditions the year around. The public is no longer willing to accept snow and ice as obstacles, and, therefore, it becomes imperative that the designer consider all the devices at his disposal to aid the maintenance crews in achieving this condition.

The Inverted Crown Design

The proper use of modern facilities at the disposal of the present generation indicates to me that on residential streets which are equipped with a storm water drainage system, the conventional design of a crowned street is outmoded, and the designer should analyze the advantages of the inverted crown, and use it where these advantages can be utilized.

Advantages

1. The number of catch-basins can be reduced to about half, with considerable saving in cost, and it is possible that if the main is in the center of the road the manholes could be eliminated and the catch-basins serve a dual purpose. The flat-type grate or, with the advantages of present-day foundry techniques, a grate designed to fit the contour of the road, could be produced, eliminating the crowned basin which obviously would never do for center-of-the-road drainage. These basins must be set accurately and are a challenge to the engineer. On residential streets where speed is restricted, no difficulty would be caused to the traveler. Traffic tends to throw all debris to the sides of the road, so stoppage of these basins in time of storm would, to a great extent, be eliminated.

2. The number of laterals would be greatly diminished depending upon the location of the main. If the main is near the center of the road, the laterals would be at a minimum and the flow would be less restricted.

3. The cost of clearing catch-basins after each snow storm would be eliminated. The clearing of catch-basins located at the side of the road is a continual and sizable expense in snow country, as is the cost of marking their placement in order to locate them more easily after a snow storm. These basins must be kept clear or their purpose is nullified; whenever thaws occur the water must be allowed to run off or flooding of the highway results. Catch-basins located at the center of the road are automatically cleared when the road is plowed, so there is no additional expense of clearing involved.

4. Snow plowed to the sides of the road becomes icy when it remains there all winter during freezes and thaws. When spring thaws occur, the gutters are usually plugged with ice, and the water is dammed up until it can find a way to flow along the cleared roadway to the catch-basin. On streets of minimum gradient, the water is usually ponded to a considerable depth. If 4 inches of ice are formed in the gutter, it is possible that the water will pond to the center of the road. The continual passage of motor vehicles through this water causes the road surface to deteriorate. All roadmen know that a dry road surface is far less trouble to maintain than is a wet one and that it is a serious weakness of design if, during the period of maximum water, drainage facilities are not operative. Catch-basins in the center of the road will eliminate this condition. They will be kept free by the snow plow and be ready for service during any thaw.

5. The construction of the conventional crowned road in residential areas which have a minimum gradient requires that the engineer spend much of his time insuring that the gutters are properly constructed to grade. Were he to expend the same effort in the center of the road, the results would be far more satisfactory. Traffic will cause water to flow to catch-basins located at the center of the road, even when minor obstructions block the flow line.

6. Driveway entrances on side-hill streets are a problem to the designer because of the low-slung undercarriages of the modern motor vehicle. The inverted crown would do away with the reversal of direction caused by the conventional crown and would help in the elimination of the trouble.

7. On streets where sidewalks adjoin the roadway, many pedestrians would welcome center drainage in wet weather. There have been untold numbers of pedestrians who have been badly splashed from puddles in the gutters. These puddles would be nonexistent with center drainage.

Disadvantages

1. Vehicles traveling on a highway having an inverted crown would tend to slide together. While not prepared to argue this point about speedways, I do not believe that this occurs on residential streets having a speed restriction. The slope of the road to the center need not exceed ¾ inches per foot. There is little, if any, tendency to slide to the edge of the road on residential streets having this crown, and police records show no evidence of accidents caused by moving vehicles sliding into cars parked at the side of the road.

2. When thaws occur the road would be made wet continually by snow melting at the sides of the road flowing to the center. On quick freeze-ups the road would be icy. It has been my experience that when thaws occur the road is usually wet anyway. When the gutters are plugged by ice, ponds are formed and passing traffic not only has tracked the entire road, but the ponds become a series of dangerous ruts.

3. Catch-basins located in the center of the road would be an obstruction both to traffic and to snow plows. This is certainly true if they are not set with care. Manholes are set in the center of the road and are not an obstruction. The same results could be obtained for catch-basins if they were installed with a comparable degree of care. Main Street, in Northampton, Mass., has partial center-line drainage and offers no hazard either to traffic or to snow plows. The street is plowed after each storm with a road grader which has no tripping mechanism on the snow-plow blade.

Considerations

The operator of the snow plow on the inverted crown street must vary his methods from those employed in the conventional crown. He must learn to position his plow so that maximum effect is obtained at the center. This is a matter of proper instruction and no extra effort is required.

(*Continued on page* 157)

PHOTO COURTESY RAY HILL

This sprayer, used by the Chicago Sanitary District, keeps the lawns free of dandelions. The Buffalo Turbine blower mounted on the trailer is used for spraying the narrow-topped levees between sludge-storage lagoons.

Marijuana makes for drama in the Chicago Sanitary District; Minneapolis-St. Paul plant has similar brush- and insect-control program

By DR. A. E. CARLSON
Brush Control Specialist
E. I. du Pont de Nemours & Co., Inc.

ABOUT the last spot many would expect proud citizens to show their out-of-town guests would be the local sewage plant. Yet, several thousand visitors a year sign the registration book at the Minneapolis-St. Paul Sanitary District's modern sewage-treatment layout, down along the east bank of the Mississippi River.

Likewise, about the first place one might expect to find clouds of mosquitoes in summertime would be around lagoons, settling tanks, and sludge-drying beds of a sewage-treatment plant. Yet, last year when live mosquitoes were needed for an exhibit picturing Chicago's mosquito-abatement program, a crew armed with insect nets spend a half-day around Chicago Sanitary District property and failed to capture a single mosquito.

Dope Peddlers Involved

The spray-gun battles against bugs and weeds around Chicago Sanitary District properties were as rousing in some respects as the same city's gang wars of the "roaring 'twenties." What started out as simple chemical mosquito-swatting was suddenly involved with dope peddlers, police patrols, and federal edicts.

In the spring of 1946, Ray Hill, Pest-Control Engineer in the office of Burton A. Scheidt, Senior Civil Engineer at the West Side Sewage Treatment Plant, began spraying for mosquito control. Along the southern edge of its property, the sanitary district maintains a drainage canal which parallels the Des Plaines River and flows into the Illinois at Lockport. Along this canal, a total of some 1,200 acres, grew a rank crop of weed commonly known as wild hemp.

Police Discover Addicts

One evening Chicago police picked up a pair of youths, charged with having provided marijuana cigarettes for their girl friends. The boys not only confessed, but led the officers to their source of supply—the sanitary district property! For wild hemp is merely the common name for the weed which supplies the narcotics trade with one of its most insidious items of trade.

Federal narcotics agents were immediately interested. They saw the 1,200 acres of marijuana as a tremendous reservoir of one of the drugs they were most anxious to stamp out. The stand must be destroyed, they said.

To accomplish that end, both mechanical and chemical means of brush and weed control were brought into play. Where the terrain was level enough for tractor operation, the weeds were mowed down. A spray rig was mounted on a small canal barge, so 2,4-D sprays could be applied along the banks.

That first year, the maijuana eradication crew was constantly beset by a phantom foe—henchmen of the narcotics ring, battling to harvest as much of the crop as possible before it was destroyed. At times they were sighted, brought to the fields in expensive cars, feverishly cutting as much of the weed as possible while a lookout stood by so they might be whisked away at the first appearance of the police. More often, their presence was felt in attempts to sabotage the work. Iron stakes driven among the maijuana stalks would ruin a mower blade. Attempts were made to tip over the spraying barge.

But the marijuana campaign was won, and with its accomplishment came an appreciation of the value of chemicals to keep other sanitary-district property free of weeds and brush. It was found that 2,4-D could be combined with DDT in the spray tank and a job of both insect and weed control handled with one application.

Other problems, however, required different chemicals. Such problems, for instance, as were the areas between

sludge lagoons—narrow-topped levees intended for roadways, but often overgrown with ragweed and sunflowers to a height of 10 to 12 feet. Then there were trackage areas—sidings between sludge-drying tanks where gondola cars could be shunted for loading with processed sludge. Where this sludge spilled on the ground, volunteer tomato plants shot skyward and cucumber vines trailed over the ground.

To knock out heavy growth, Ray Hill has found that a combination of 2,4-D and 2,4,5-T does a more thorough job than 2,4-D only. On the actual roadbed and trackbed areas, where freedom from grassy as well as high-growing weeds was desired, 90% sodium TCA was also applied. Today, grassy banks and roadsides which help control erosion and the re-seeding of future weed crops, plus clean roadbeds and trackbeds, attest to the good job of weed control being done.

The four sewage-treatment plants of the Chicago Sanitary District handle a total of more than 1,500,000,000 gallons of sewage a day. The lagoon areas already developed are no longer adequate, and new, adjacent acreages are being cleared for the construction of more sludge lagoons. In these and other areas, heavy brush must be controlled. Cutting it only aggravates the situation, for a dozen or more new sprouts spring annually from stem.

Most effective chemical brush killer has been found to be ammonium sulfamate, better known as "Ammate" weedkiller. As a spray on foliage, this chemical is absorbed into the plant and translocated to the root system to provide a complete kill. As dry crystals or in a thick paste, it may be applied to fresh stumps to inhibit sprouting.

Five years after his pest-control program first got under way, Ray Hill will tell you that the spray rig has become one of the Chicago Sanitary District's most important pieces of maintenance equipment. Insect control around a sewage-treatment works, he pointed out, is vital to the city's health program. Only when weeds and brush are kept down is thorough insect control practical. In addition, weed-free and brush-free roadsides, track areas, and hillsides have meant savings in time and labor.

Twin Cities' Plant

In October of this year, the national convention of the Federation of Sewage and Industrial Wastes Association is to be held in St. Paul. About 900 delegates are expected to attend. And when they visit the sewage-treatment plant operated by the Twin Cities, they'll see grounds that rival the best city parks and a river front that is clean and attractive.

Two years ago, the dike along the river was grown up with willows, elms, red maples, wild grape, and other brush and weeds. The face of the dike was originally protected by willow mats with a stone cover. But the Mississippi, a potent sower of seeds, swept downstream from the river-side grooves to the north. Thus, the sprouting of brush and weeds became a nuisance, and yearly cutting of this growth an expensive chore.

It was in the summer of 1949 that Chief Chemist Maurice L. Robins and Assistant Engineer Ben M. Storey turned to chemicals to solve their brush problem. They were already using 2,4-D sprays to keep dandelions out of the lawn. It was a relatively simple job to convert their push-cart spray rig for brush spraying. For lawn work, the spray emerged from a boom, low-slung to skim along just above the grass blades. For brush work, a long hose extension was attached to the line from the pump, so that the 25-gallon rig could be wheeled along the top of the dike allowing the spray applicator to work down among the tall growth.

Pest Control Engineer Ray Hill (left) and Senior Civil Engineer Burton A. Scheidt, of Chicago's West Side Sewage Treatment Plant, inspect some of the marijuana crop which invaded the Chicago Sanitary District's property.

Next came the question of the right chemical to use. A little investigation showed that "Ammate" weedkiller, the same chemical used against brush by the Chicago Sanitary District, was the best bet. This material is non-selective, killing all growth. It shares with 2,4-D the good features of being non-poisonous, not creating a fire hazard, and rendering only brief sterility to the soil.

In 1949, a total of 1.6 acres of dike bank was sprayed with varying dosages of "Ammate," in a series of test plots. The results in dead brush was gratifying. The spring of 1950 indicated that the resprouting activity on the dike was limited to sumac and wild grape, which had been shielded by the dense growth above them during the 1949 spraying. These were resprayed last year, and the way things looked this spring there will be little need for spraying in 1951.

Sanitary district officials of the Twin Cities are pleased with their weed-and-brush-control work, a job which contributes to the pride they take in their plant.

PHOTOS COURTESY CHICAGO TRIBUNE

Marijuana along the Chicago Sanitary District's drainage canal is sprayed with a Bean rig from a barge during the federally ordered eradication campaign.

Was the proposal better than the actuality?

Apartments Or

SINCE the war, zoning debates have raged in residential areas throughout the country where developers have sought permission to build "apartments." Usually owners of private houses in the neighborhood have been in violent opposition to all proposed apartment-house schemes. It has made no difference to them whether the plans have been for very-low-density row houses, arranged in groups of varying shape and form; "garden apartments," mixing flats and duplexes, or tall elevator buildings designed for extremely low land coverage with broad, open space for landscaping and recreation. The reactions to such schemes have often been emotional and violent, drawing into vocal action nearly every governmental and civic unit in the community.

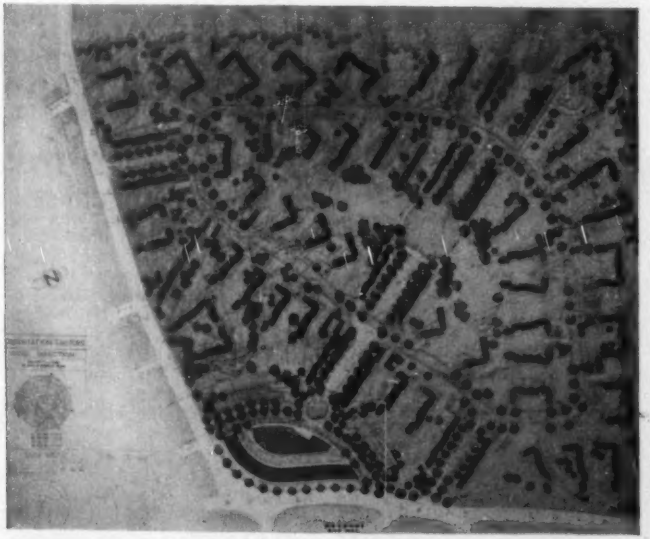
Some of this opposition has been warranted. Certainly some of the highly speculative apartments built under the FHA "608" provisions are now dubious assets to the communities in which they are located. But what happens when neighborhood opposition turns down a thoroughly sound investment project—sound from the community's viewpoint—and gets in its place new speculative single-family dwellings?

The story of the Oak Ridge Golf Club property in the unincorporated part of Eastchester, N. Y., near Crestwood, is an interesting example.

What was proposed . . .

In early 1946 a group of prominent savings banks in New York City and Westchester County were willing to invest up to $8,000,000 in a large suburban residential development. After studying a number of likely sites, they selected the old 106-acre Oak Ridge Golf Club, 32 minutes' commuting time from Grand Central station. A project of openly planned, two-story apartments, housing 750 families, was contemplated. Proposed rentals averaged about $25 per room per month. In the northwest corner of the site was a nucleus of shops, suggesting the logical development of a modern shopping center, easily accessible to tenants without the necessity of crossing streets. Gently rolling topography and a number of existing large trees would make possible a variable, open, and interesting site plan, in direct contrast to the "gridiron" pattern of streets typical in adjoining residential areas.

The banks were interested above all in making a sound investment by the process of designing and constructing a forward-looking community with living amenities and low density that would assure its long-range success. The proposed site plan and sketch, evolved after careful study, show the character of the project which would have been built.



The proposed "Waverly" garden apartment project. Note attention given to topography, trees, creation of open vistas, and sun and wind orientation factors. Parking and traffic needs were also carefully considered in relation to the project as a whole and to a well-planned shopping center, seen at lower left.

Property Owners' Opposition

But neighboring property owners, heedless of the project's many admirable features, succeeded in arousing the community and defeating the necessary rezoning proposals. Their opposition was based on two underlying points: first, esthetics—the private house owners felt that there was an innate superiority in private house design over all other types; secondly, a feeling that people living in apartments are on a lower rung of the social ladder.

The aerial view and photo taken during the winter of 1950 clearly indicate what subsequently happened when the golf course was subdivided for specu-

Individual Houses?———

By FREDERICK H. ALLEN
Harrison, Ballard and Allen
New York, N. Y.

. . . and what was built

lative private housing, some still under construction. Many fine trees have been destroyed; the gently rolling nature of the terrain has been largely ignored, and the houses are crowded in a singularly unimaginative way on 50- to 65-foot front lots.

The proposed garden-apartment project would have eliminated telephone poles, and put all utilities underground. It would have taken advantage of the fine scenic views possible, including that along the waterfront. The entire area would have been maintained and all landscaping cared for meticulously in one ownership.

Two groups of houses have now been completed in the speculative development. There still remain large amounts of vacant land which may possibly be allowed to default in taxes when the speculative builder has saturated his market. In one group 225 houses were built, all but a few on 50-foot lots, selling for $14,700 to $22,500. Their estimated average coverage of land, without garage, is about 13%, as against the 13.3% coverage for the garden-apartment project, including garages and a community center. Houses in the second group are larger, occupying lots averaging 65 feet, and currently selling for $22,000 to $24,500. About 60 of these have been sold.

But what about some of the more "practical" aspects, of general interest to the community? In which type of project are garbage-collection and snow-removal costs higher? Which is safer from the traffic viewpoint and which has more useable play and recreation space for young and old? In which will street-lighting and street-maintenance costs be higher? The answers seem obvious.

The comparisons cannot, of course, be conclusive. But they do seem to indicate that, at least in Eastchester, private-home owners adjoining the Oak Ridge Golf Club made a big mistake in blindly opposing a garden-apartment project to be built and maintained for investment purposes.

Municipal officials and community leaders elsewhere would be wise to examine carefully all aspects of proposed projects which differ in dwelling type from those they are accustomed to seeing. Each case should be judged on the criteria of long-range community attractiveness and soundness before final decisions are made to swing the pendulum in reaction to the demands of a particular neighborhood group.

Comparison of Other Attributes of the Two Projects

	Garden-Apartment Proposal	*Speculative Private Housing*
No. of dwelling units per acre (without roads)	9	7-8
No. of children per family (estimated arithmetical average)	0.64	1.42
Dwelling unit size	1 Bdrm. — 40% 2 Bdrm. — 55% 3 Bdrm. — 5%	3 Bdrm. — 90%
Sq. area of 3-bedroom unit	1,200 sq. ft.	1,200-1,450 sq. ft.

FAIRCHILD AERIAL SURVEYS, INC.

This aerial view shows a speculative private housing project, sections of which are still in the process of construction. This one is typical of countless such projects built with government-guaranteed mortgages during the past few years.

Garbage Into Fertilizer

How Santa Ana, El Salvador, solves its garbage problem

One of the garbage-processing pits.

By J. CYRUS GRAFFIN *

WHAT American city with a population of 50,000 to 100,000 would not like to have its streets cleaned and its garbage hauled away and disposed of for $12,000 annually?

A few years ago, four civic-minded citizens of Santa Ana, a city of about 55,000 located in the coffee-raising zone of western El Salvador, began an experiment to convert the town's waste products to useful purposes.

In 1940, Eugenio Araujo obtained a concession from the Salvadorean government to collect and dispose of garbage in any one or all of the towns in that republic. It was not until 1946, however, that he found capital and men with confidence in his enterprise.

Plant Details

The plant was a crude affair. Ten tile-lined troughs, 33 feet long, 9 feet wide, and 40 inches deep, roofed with palm fronds, constituted the processing equipment. Sixty days were consumed in making organic fertilizer. The undertaking proved that rich fertilizer could be made in this way. With full confidence in what could be accomplished, La Fabrica de Abonos Organicos de Araujo S. A. then committed itself with the town corporation to haul all garbage and to sweep the streets.

Seven acres of land, four trucks, and two Royer compost mixers were bought, and four open-sided galleries, containing 30 troughs each, and roofed with aluminum sheets, were constructed. A small office and building, to house one of the grinding mills and a storage room, completed the physical equipment. A Link-Belt "Harvest Hand" conveyor helps handle the material.

Today, the process of making fertilizer out of the town's garbage has been shortened to 44 days.

Every day trucks bring to the plant some 60 cubic yards of refuse. This includes old shoes, tin cans—in short, everything a normal household puts into the garbage can. At the factory this waste is dumped in a pile on the ground and is then shoveled by hand into a short, Link-Belt magnetic conveyor. In the 15 feet the raw refuse travels, large extraneous articles are picked off the conveyor by an attendant who throws them aside into a truck. Nails, cans, and other metal objects are held to the belt and dumped into a bin after the garbage has fallen into the 4-ton-per-hour Royer grinding mill.

From this mill the ground refuse falls onto another belt conveyor, which carries it overhead to the various troughs in the first gallery. As it falls into any one of the designated pits to be filled, it is sprayed by liquids from the city sanitary sewer carried to the plant by a 3-inch-diameter pipe. The wetted raw garbage is then spread evenly in the 40-inch-deep trough and left to ferment for 11 days at a controlled temperature of 40° C.

Fermentation Action

After this first period of fermentation, the brown, semi-raw product is shoveled into wheelbarrows and placed in troughs in the second opensided gallery. Here it ferments for another 11 days at temperatures between 45° and 48° C.

At the expiration of this second cycle, it is again hand-removed, this time to pits in the third gallery where the heat generated is kept at 55° C. Every morning, temperature readings are taken by driving an iron stake into the half completed fertilizer and then inserting a thermometer. The heat at the bottom of the pit is always approximately 10° higher than at the surface. The product at this point, surprisingly enough, has no odor, and, in spite of the fact that it is practically in open air, it attracts no flies.

After another 10 days, the fertilier is transferred to the fourth, and last, set of pits. Here it is kept at 60° C. Whenever thermometer readings fall below this point, sewer liquid is added;

The semi-finished product is moved from one gallery to another.

* J. Cyrus Graffin is a free-lance writer from San Francisco, Calif. He obtained the information from Senor Perez, principal owner of the Araujo factory, and from the Santa Ana city engineer. We were privileged to have the story reviewed and checked by Senor Roberto Quinonez, Minister of Agriculture of El Salvador.

or, if they should rise above this point the fertilizer is turned over. Thus, all through the various cycles, control of heat generated consists of wetting or turning.

At the end of approximately 43 days, the product is hauled to a flat, open, earthen patio where it is spread out and sun-dried for six hours. Senor Perez, who is manager as well as one of the principal stockholders, realizes that so much manual handling is uneconomical and plans to install a boiler and mechanical drier which will accomplish this purpose in half an hour, rain or shine.

From the drying patio, the fertilizer is again scooped up and taken to the building which houses the second grinder. A short belt-conveyor raises it to a height of 10 feet, where it is dumped into a sieve which has 2¼-inch-diameter holes so that all large objects, such as shoes, horns, and pieces of rubber tire, are sifted out. That which passes through the first sieve is then shaken into a second one having three holes to the square inch. Other extraneous matter is discarded before the fertilizer falls into the second grinder. After this the mass, now a fine, light, brown substance with a fibrous texture, goes through a last sieve of six holes to the square inch.

Heavy Demand for the Product

The fertilizer, now a finished product, is then conveyed by a belt to the shipping room where it is hand-shoveled into sacks or trucks for shipment. Since trucks are always waiting, the factory has never been able to stock-pile its product, which sells for the low price of 60 cents per 100 pounds.

The fertilizer contains 1½% to 2% nitrogen; 1½% to 2% phosphoric acid; 2½ to 3% potash; 70% to 75% organic materials, and 30 other elements, such as manganese, sulphur, copper, iron, and the like, in small quantities. The efficacy of the product is contributed to the organic matter—"Humus Vital" the factory calls it. Results from using this fertilizer on flower beds, in orchards, and on coffee and sugarcane plantations have surprised everyone. Senor Perez says that he frequently receives an extraordinarily large-size tomato or orange from a grateful user of his product, thus testifying that Humus Vital has grown better and bigger agricultural and horticultural produce.

Since El Salvador is the third largest coffee-producing country in the world, the coffee raisers have stampeded to obtain Humus Vital for their berry trees. They feel that high coffee prices may last for only a few years more, so by using the Araujo product they can step up production now, instead of waiting five to eight years for new trees to bear fruit.

During the four years of operation, the company has ploughed back all its profits into the business. It has increased its facilities in plants and equipment to a total of 100,000. Moreover, it now employs 32 men and women at the plant proper, and has 48 men hauling garbage and sweeping streets. It produces 35 cubic yards of fertilizer daily, or 10,000 yards yearly.

The City of Santa Ana levies a two-cent tax per square meter yearly on property owners for the collection and sweeping. From this assessment, it pays the Araujo Company $12,000.

Senor Mario Levy VanSeveren, a consulting chemist in Santa Tecla, states that 300 pounds of organic-matter fertilizer applied to two acres of coffee trees is equivalent to 10 yearly applications of chemical fertilizer.

Why Herrin Adopted Kitchen Garbage Grinders

By FRED E. SCHOONOVER, JR.
Mayor
Herrin, Ill.

HERRIN, Ill., adopted kitchen grinders as its method of food-waste disposal for economic as well as sanitary reasons. Our budget will not stand a regular garbage-collection service, and the individual disposition of garbage has been so irregular in many cases that it was a disgrace to the city. Overloaded garbage cans are a target for stray dogs, cats, and rodents, and are a breeding place for flies.

However, we have a new $300,000 sewage-disposal plant and intend to make maximum use of it.

We believe that the disposer, which macerates fresh food wastes and flushes them down the kitchen-sink drain for disposal along with sewage wastes, is the answer to garbage problems in this city of 10,000 people.

Our solution began to develop through a study of methods used in Jasper, Ind., early in 1950. Careful investigation revealed that, in our opinion, there was just one solution to our problem—electric food-waste-disposer units.

First, we carefully questioned all of our water-department customers to determine their interest in disposal units. Their enthusiastic response caused us to make the decision to purchase disposers and make them available to our people at a substantial saving over retail prices.

The manufacturer sent his sales specialists and sales promotional people to help us present this proposed action to the population of Herrin. Our city water department, our local bank, and our plumbers and electricians all cooperated in this civic movement, which we consider an important step toward a safer and more healthful Herrin.

Thus our city became the second in the country to push the idea of automatic garbage-disposal units for all its citizens.

Financing of the installation is either on a cash or credit basis. Householders who prefer time payments may use them. All transactions are between the city and the individual householder. The Bank of Herrin is underwriting the time transaction for the city. The Disposall units are purchased at a special "municipal" rate.

Gordon Roney, chief engineer of the Disposall Division of the General Electric Company, came to Herrin with a newly-developed cutting tool which permits use of the Disposall regardless of the type of sink installation.

The City of Herrin placed an initial order for 100 G-E Disposall units. The success of the project is evident: Herrin has placed its second order for an additional 100 units.

City officials of many near-by communities are watching our progress with keen interest. We are happy to be the first to bring this municipal plan for garbage disposal to our part of the country.

Bureau of Governmental Research Becomes Citizens Research Council

ONE of the best-known municipal research bureaus in the United States —the Bureau of Governmental Research of Detroit, Mich., established in 1916—announces a change in name to Citizens Research Council of Michigan.

The change, says the announcement, stems principally from two facts: (a) the merger of the Michigan Public Expenditure Survey with the Bureau, and (b) the fact that more and more state and local governmental problems have become so intertwined as to be inseparable.

The scope of activities will be expanded. For example, increased concentration will be directed at the state level, and a counseling service, particularly to citizen groups throughout the state, will be developed.

Loren B. Miller (successor to the late Lent D. Upson) continues as executive director of the enlarged organization.

Sewage Treatment Tailored to an Over-all Plan

New construction at Camden, N. J., designed to eliminate pollution in the Delaware and Cooper Rivers, embodies special features to meet combined storm-water flows

By WALTER L. LEACH, *Partner*
Havens and Emerson, Consulting Engineers
New York, N. Y.

IN 1945, Camden was faced with the unavoidable need for action to put an end to pollution of the watercourses adjacent to the city. The people were well aware of this need, just by looking at the foul condition of the Cooper and Delaware Rivers. Philadelphia, Camden's big neighbor across the river, had the same problem and had definite plans on the board for treatment of its wastes. The Chancery Division of the Superior Court of New Jersey had issued orders advising what should be done and when it should be completed. The Interstate Commission on the Delaware River, or "Incodel," as it is locally known, also had stated plainly where it stood on cleaning up the Delaware.

So in 1945, Camden started. It has been the privilege of our firm to serve as engineering consultants on the investigation, design, and supervision of the construction for the project.

The problem has many complexities. Contrary to what the poets like to say, coastal rivers do not slip silently into the sea, then to be forgotten. They reach the sea, and the sea pushes them back with every tide—the pollution with them. So this oscillating basin becomes an unsightly and obnoxious putrefying mass of sludge banks, unburdening colloidal and dissolved solids far too great for the inflow of upland waters to purify.

Elements of Waste

Camden City, with its 9½ square miles of area embracing nearly 125,000 people, supports itself through the activities of about 300 manufacturing plants. These are largely dairies; food-processing, tanning, radio, wool-scouring, paper-board, and gas-manufacturing plants; dye and chemical works, and soap, cork products, and oil-processing industries, all of which produce wastes not particularly simple to purify. These wastes not only vary in strength and volume from hour to hour and day to day, but often from season to season. More than 50 of these plants have private wells, and several take water from the rivers, so the city has no easy way of determining the volume and strength of the wastes. Studies, however, indicated that they contribute an average volume of wastes amounting to over 40 mgd, or more than double the average daily water use of the rest of the city. Our industrial-wastes survey showed that the 66 major industries were contributing an average of 50,500 pounds of 5-day BOD and 82,400 pounds of suspended solids each day to the polluted Delaware, or the equivalent of the sanitary discharge from a population of 310,000, roughly 2½ times the population of the city.

Moreover, infiltration presented substantial volumes of flows, for Camden has many old brick sewers, often laid without mortar in the inverts in order to drain the surrounding groundwater. We estimated an infiltration rate of 1,500 gallons per acre, or the equivalent of about 48,000 gallons per mile of sewer for the older sections.

Present Sewer System

The sewers of Camden carry both storm water and sewage, and discharge into the Delaware and Cooper Rivers through 30 separate outlets. Flows from these separate outlets must be intercepted and conveyed to the treatment plants.

As the intercepting sewers must be constructed below the existing sewers, several district pumping stations are required, as well as pumping stations at the treatment works. The new intercepting sewers range in size from 12 to 72 inches in diameter.

With these combined sewers, storm water required special attention. Obviously, since storm water is relatively unpolluted, it can go directly to the river without treatment. This is not so during the first flush of storm water, which carries wash from private yards, areaways, and street gutters and dislodges deposits from the sanitary-sewage flow that have stranded in lateral sewers during dry weather, so the first flush during storms is also intercepted and conveyed to the treatment plant.

Intercepting chambers are being provided on each of the main sewer outlets near the junction with the main collecting sewer. These chambers will be provided with automatic regulating equipment that will divert the maximum dry-weather flow of sanitary sewage and industrial wastes together with a pre-determined volume of the initial storm water into the collecting sewer leading to the sewage-treatment plant. The remainder of the storm flow will be diverted into the rivers through existing outlets. As most of the outlets are below high tide, these chambers will also be provided with tide gates to prevent the backflow of river water into the collecting sewer.

Storm Water

Experience generally has shown that if the first flush of storm water so diverted is equal in volume to 10% of the maximum normal sewage flow, adequate protection will be provided. Designs were on the basis that the maximum flow will be 165% of the average domestic and commercial flow, 200% of the average industrial flow, and 165% of the infiltration. Quantities expected on this basis are 13.4 mgd for a minimum flow, 45.7 for the average figure, and 90.6 for the maximum, which is not expected until the year 2000. The intercepting sewers are designed for 110% of this maximum.

To provide treatment, the city is building two plants, one large and one small. After much study we arrived at, and the State Board of Health agreed to, a purification figure of 70% reduction in BOD. This led to the adoption of activated sludge treatment for the small Baldwin's Run plant, and high-rate trickling filters for the large main treatment plant.

Plant Details

The Baldwin's Run plant is designed for a minimum flow of 1.2 mgd, an average flow of 2.3 mgd, and a maximum flow of 3.9 mgd. The Detritor and main conduits are designed for an ultimate flow of 6.0 mgd. Essentially, the plant

provides grit removal with a single Detritor and a by-pass; comminution of larger floating solids with a single unit and a by-pass with a bar rack; primary sedimentation; short-period aeration, at present, of activated sludge in two spiral-flow tanks equipped with swing diffusers, and final sedimentation in two mechanically cleaned circular tanks. Aeration will be provided by two Root-type blowers, each able to move 2,000 cfm, and having partial capacities of 1,000 and 1,500 cfm. This allows air variations at 0.6 cubic feet per gallon of average flow to 1.5 cubic feet at maximum flow.

The existing Imhoff tanks will provide a portion of the primary settling, aided by rectangular settling tanks equipped with straight-line collectors for the removal of sedimented solids and scum. The solids settling in the Imhoff tanks will be digested in the sludge compartments. Solids settling in the new primary tanks will be digested in heated tanks with floating covers, along with excess activated sludge and all floating scum and grease. The sludge will be dewatered on glass-covered drying beds.

The existing diversion chamber on the 60-inch and 90-inch sewers will be rebuilt and equipped with a mechanically cleaned bar screen and tide gates.

The main plant will treat the bulk of the sewage. As indicated previously, the sewage will be treated by grit removal, comminution, primary sedimentation, oxidation on high-rate trickling filters, and final sedimentation. The sludge will be dewatered on vacuum filters and dried or incinerated.

The plant will receive sewage through a 72-inch concrete inlet pipe with an emergency by-pass. Double tide gates will be provided at the outlet of the by-pass to prevent backflow from the river.

Sewage-Treatment Steps

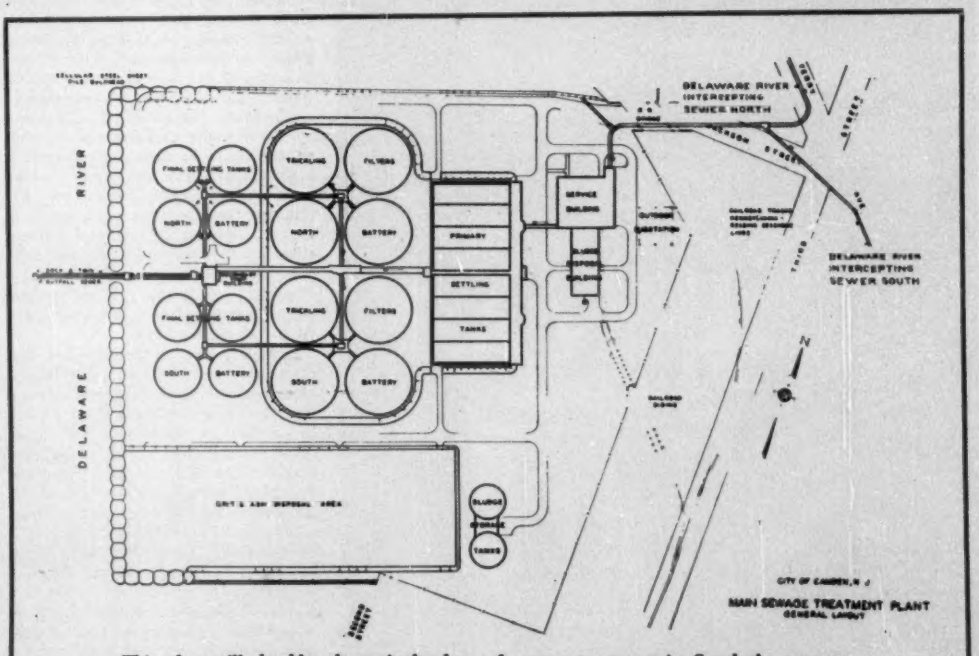
The sewage will first pass through two mechanically cleaned trash racks at the entrance to the wet well. Each unit is 5 feet wide and will be submerged 7.3 feet at the maximum wet-well level and will have 3-inch openings. Four electrically driven centrifugal pumps, each rated at 30 mgd against a 43-foot head, will lift the sewage from the wet well and deliver it to the rest of the plant. One unit will be operated at constant speed, and the other three by variable-speed drives, automatically controlled by the liquid level in the wet well. The pumping arrangement can accommodate itself to flows ranging in small increments from 15 to 120 mgd.

Two Detritors, each 35 feet square and rated at 53 mgd, will remove coarse inorganic material, and five comminutors with ⅜-inch slots will macerate the remaining large solids so that they will be more easily treated later.

Each comminutor is rated at 20 mgd under continuous operation, or 25 mgd for short periods. A by-pass channel is provided, equipped with a hand-raked rack having ¾-inch openings.

The sewage then will pass by gravity to eight primary settling tanks, each 50 feet wide and 186 feet long, with 10 feet average water depth. These will provide a detention time of 150 minutes at the design flow of 53 mgd. The settled effluent will then go to eight trickling filters with revolving distributors. Each filter will be 150 feet in diameter with an average stone depth of 6 feet. The 5-day BOD loading, based on 35% removal in the primary tanks, will be about 1.6 pounds per cubic yard of media, or 2,570 pounds per acre-foot. The minimum rate of dosage will be 11.7 mgd per acre and the maximum rate will be 26.6 mgd per acre. For sewage flows of less than 38 mgd, effluent from the final settling tanks will be returned to the inlet of the trickling filters as required to maintain a minimum dosage rate in excess of 11 mgd per acre.

The final settling tanks will be in eight units of the circular center-feed type with a double overflow weir near the periphery, and with mechanical



This plant will shoulder the main burden of sewage treatment in Camden's program.

equipment for sludge removal. Each unit will be 110 feet in diameter with 9¾ feet of sidewater depth, and will provide a detention time of 150 minutes at design flow. The effluent from these tanks will flow through the recirculating pump suction well, and then to the Delaware River through two 50-inch pipes constructed in a steel bulkhead. The bulkhead is arranged for use as a dock.

Sludge will be disposed of without digestion. Two tanks are provided—adequate to store sludge for six days. The raw sludge will be conditioned with lime and ferric chloride and dewatered on vacuum filters. Six filters are provided, each with an area of 250 square feet. With five units in operation, the filter rate will be 4.3 pounds per hour per square foot based on 24-hour operation five days a week.

The dewatered sludge cake will be dried or incinerated in two units that have a rated capacity for evaporating 7,000 pounds of water per hour and burning 3,000 pounds per hour of dry solids. On a basis of 70% moisture in the filter cake, this represents a total burning capacity of 240 tons per day.

The matter of financing required much detailed study. General obligation bonds were not promising, since the city already had a substantial indebtedness, close to its statutory limit. However, New Jersey law allowed exemption from this limitation if funds are required to abate or eliminate a condition hazardous to public health. Accordingly, authorization was granted for $9,000,000 in over-all construction funds, with the understanding that funds for the entire project, including debt service, maintenance, and operating expenses would be provided by sewage-service charges. The adopted ordinance provides for service charges based on volume and strength of sewage, and became effective in 1949. The city decided that instead of full collections for the gallonage charge, the billing during an initial period of a year or more would be at one-third rate and be increased by steps as the program progresses. The charge for excess strength will not be made until after the treatment plant is placed in service.

Construction is proceeding on an orderly schedule and is planned to be completed before the end of 1955.

Construction Industry Solves Bluefield's Park Problem

DONATION by twelve contractors of earth-moving work worth an estimated $75,000 has enabled Bluefield, W. Va., to acquire increased recreational facilities which would otherwise have been beyond the city's means.

Biggest job was scooping out a site for a swimming pool and shearing off a mountaintop back of it for a picnic and recreational area in a city park. Led by Rish Equipment Company's Roy Hill, manager of the big Bluefield International Harvester industrial distributor organization, a dozen earth-moving contractors and coal strippers put their bulldozers, shovels, and trucks to work in a mass three-day attack on the project.

Officials of the Bluefield, W. Va., park-site committee confer over plans, while in the background an International TD-18A crawler tractor digs in on the job. The project was co-sponsored by a local newspaper, *The Sunset News*.

This equipment included 3 International TD-18 crawler tractors, a Bucyrus Erie power shovel, an Ingersoll-Rand compressor, 25 dump trucks of assorted makes, a Caterpillar motor grader, an Allis-Chalmers dozer shovel, a Lorain power shovel, 3 Caterpillar tractors and a Northwest power shovel.

Bluefield's Mayor, W. L. Thornton, opened the show by firing a pistol, and an armada of earth-moving equipment made the dirt fly while crowds of sidewalk superintendents looked on. By that time, everybody wanted to get into the act. Women of the local garden clubs set up a mobile kitchen and supplied the workers with food donated by Bluefield merchants. Oil companies poured barrels of free fuel and lubricants into the machines.

Just after noon on the third day, the contractors and coal strippers, hugely enjoying their spotlighted role, assembled their equipment into a parade led by a hastily summoned highschool band, and toured the city streets in celebration. The Rish Company, as prime movers of the show, played host to the workers at a banquet that evening.

Meanwhile, eight retail lumber yards built nearly 50 picnic tables and benches for the area. Prodded by an offer from the electricians to do the wiring if someone will furnish materials, wholesale houses are talking seriously about donating steel, and plumbers about giving and installing necessary pool equipment; the carpenters' union is considering building the forms.

Jackson, Miss., Uses

4 Types of Street Paving

Alternatives give wider choice to contractors and help keep prices lower

By E. T. THOMAS
Assistant City Engineer
Jackson, Miss.

JACKSON has experienced an unusual program of public works since 1945, after the close of World War II. The factors most responsible for this progress have been the rapid normal growth enjoyed by the city and the expansion of the city limits, which occurred in 1949.

The city had an area of approximately 14 square miles from 1928 to 1949, when the City Council passed an ordinance extending the city limits to embrace approximately 28 square miles, or twice the original area. This action immediately brought demands for paved streets, sanitary sewers, water mains, and other essential city services.

Continuous Paving

Street-paving operations have been in continuous progress for several years, and in general the types of pavement being constructed fall into four categories: (1) 5-inch reinforced, uniform concrete pavement (residential); (2) 8-inch clay gravel base, with asphalt surface; (3) 6-inch portland cement-soil stabilized base, with asphalt surface, and (4) combination 10-inch selected-material base, with asphalt surface.

Of these four types of pavement, which are believed to be comparable in quality, we find that contractors are currently bidding lower on the soil-cement type and on the combination selected-material type.

The two most recent projects undertaken, awarded to the lowest bidders, entailed a soil-cement base course, surfaced with a double bituminous-surface treatment and sealed with a 1-inch, hot mix, asphaltic concrete wearing course.

The general procedure in this construction is to utilize the material found in the street for the purpose of stabilizing and to apply approximately 12% by volume of portland cement. The curbs and gutters are constructed prior to the final grading and shaping of the street. The bulk cement is then spread by means of mechanical spreaders and incorporated into the subgrade soil with a P & H single-pass stabilizing machine. Compaction of this material is accomplished by means of sheep's-foot, wobble-wheel, and tandem rollers. The mixing and compaction accomplished, the completed soil-cement base course is coated with a curing agent of emulsified asphalt, after which the asphaltic surface is completed.

Combination Base

The combination selected-material base course includes a 10-inch base, constructed in two layers—the first course being 6 inches of selected sand clay, with a 4-inch layer of sand-clay-gravel as the top course. This material is wetted and rolled in the usual manner by means of approved water trucks, wobble-wheel rollers, and tandem rollers.

After the base course has been rolled and shaped and has set sufficiently to receive the surfacing, the prime coat is applied and the surface completed, with a double bituminous-surface treatment, or mat course, and a 1-inch, asphaltic-concrete wearing course. The material used for the surface treatment, or mat course, is crushed slag and hot asphalt cement. The hot plant-mix wearing course is composed of fine crushed slag, concrete sand, and mineral filler, mixed in proportions that yield a high stability.

Jackson maintains a testing laboratory and furnishes inspection and control of all asphalt mixtures and other materials incorporated into paving projects. Asphalt mixtures are designed according to the Marshall method and are controlled by means of a Marshall stability machine.

Concrete

Concrete pavement is not generally used on residential streets, but has been used in some instances because the competition among contractors resulted in lower bids for a 5-inch uniform reinforced-concrete pavement, with integral curbs.

The major equipment generally used by local contractors is Barber-Greene and Cummer asphalt plants and Barber-Greene asphalt spreaders.

The City of Jackson now has under contract five paving projects, totaling approximately $1,378,000. This work is distributed throughout all sections of the city and involves construction of 54 different streets, with work being performed by 11 contracting firms.

Soil-cement paving is popular with contractors in Jackson. Above is a street of this type.

A P&H mixer prepares the base and a sheep's-foot roller compacts it for the soil-cement type of surface.

What Is the Best Size for a City?

By JAMES DAHIR

The writer is the author of *The Neighborhood Unit Plan*, published in 1947 by the Russell Sage Foundation, and *Communities for Better Living*, Harpers, 1950. This article is from a section of his next publication, which will deal with region-building based on development of cities of limited size.

THERE is a growing conviction that city-size has a necessary relation to the quality of urban life. The difficulty lies in determining with any precision what that relation actually is. Most of us are so closely associated with some particular city that we find it impossible to approach the question objectively.

It is, therefore, of more than passing interest to discover a doctoral dissertation from one of our major universities, focussing on "An Examination of the Problem of Optimum City-Size," the title of Otis Dudley Duncan's Ph.D. thesis.*

Mr. Duncan's question is: can it be determined from the relevant data (set down under ten heads) whether there is a certain city-size which best achieves the accepted standards for the particular activity, service, or need? The following sketchy summary is intended to excite, not to satisfy, interest in this important theme.

1. physical layout

Size and density increase together. The city of 2,500 population covers about 1 square mile; the city of 1,000,000 occupies 90 square miles, and has more than four times the density—11,068 per square mile. More than twice as many people can use private transportation to reach the central business district in a city of 25,000 to 50,000 than in cities of 500,000 or more. Journey to work is about five times as far and takes almost three times as long as that in cities of 25,000 or less. The automobile can be fully exploited only in the smaller cities.

2. family life

The total environment is thought to be more favorable to family life in small cities. Home ownership is easier to attain, single family dwellings predominate, rents tend to be lower. On the other hand, dwelling units of larger cities are said to be newer and in better repair and more fully equipped. High-quality housing should favorably influence family life, but Duncan poses the question whether it does in view of the fact that "family size is inversely correlated with standard [of] living."

3. churches and voluntary organizations

One authority is quoted to the effect that 1,000 to 1,500 fairly homogeneous persons are required for one church, yet communities of 450 only, on an average, have one church; those with 1,000 have two churches; and places with 2,500 have four. Mr. Duncan found that a city of 30,000 might have the 20 different denominations represented, thus providing for 75% of American church groups and 90% of American church membership.

As to associational life, treatment here is meager. Conclusions suggested are that larger cities offer greater variety and supply better financial support, but that for particular organizations, both the scope and influence are greater in smaller communities.

4. economic diversification

The generally accepted idea that the greatest protection, economically, rests with the large cities having the widest diversification of industry is found to be overemphasized. Medium-sized cities contain about half the 20 varieties listed in the census of manufactures, and appear to equal the biggest cities with respect to weathering economic crises.

5. health

There is no lead here on the best size for a city. Cities with a population of 500,000 to 1,000,000 have at least three-fourths more physicians in relation to population than cities of 2,500 to 5,000. Most specialists require a population of 50,000; some 100,000 or more. Largest cities show better rates on infant mortality (one of the most sensitive indexes) though all classes of cities have improved. On the other hand, life expectancy in later life is less for the larger than the smallest cities. The "less salubrious residence" provided by the larger cities is balanced somewhat by their capacity to "more effectively mobilize their resources for medical care."

6. municipal efficiency

Though Mr. Duncan asserts that with larger resources and much greater expenditure per capita the larger cities do not seem to be able to buy a better environment for their citizens, he does not allow that the following census figures for 1942 permit an interpretation which would favor any particular city-size. It is possible to attribute the dif-

* 1949. Available in microfilm from the University of Chicago Libraries, Department of Photographic Reproduction, Chicago 37. $1.75.

ferences to more and better services in larger cities, as well as to argue that they are less efficiently administered than are smaller places:

Population Size	Annual Per Capita Expenditure
1,000,000 and over	$49.55
500,000 to 1,000,000	45.87
250,000 to 500,000	30.40
100,000 to 250,000	28.76
50,000 to 100,000	26.23
25,000 to 50,000	25.52
10,000 to 25,000	17.11
5,000 to 10,000	13.30
2,500 to 5,000	11.03

7. education and communication

In the public education system, and in libraries and museums, there appears to be one common finding. Considerable advantage rests with the larger cities in terms of facilities and budgets, along with declining per capita effectiveness or use. Thus, though cities of 100,000 and over spend nearly twice as much per capita for public education as do those between 2,500 and 10,000, yet, says Mr. Duncan, "the considerable advantages of the large cities . . . are not reflected to a commensurate extent in the educational attainments of the populations." Only in places of 250,000 or more are found the larger and more specialized museums, but active use of the museum facilities as measured by attendance figures show "an inverse relation to city-size." This "population law" applies to libraries also, where the statistics of books per capita, use of the library, and volumes borrowed were found to be "clearly an inverse factor of the size of the city."

Libraries well illustrate the difficulties of setting one figure as the "best" for the size of a city; 35,000 seems adequate for material resources, but 50,000 seems required for adequate staff, and 75,000 appears to be the size at which were first found satisfactory "service performance criteria."

Radio. A population base of 10,000 might justify a radio-broadcasting station. Metropolitan competition is not such a large factor if FM is used, for this type of station has a radius limited to the horizon. In addition, it is cheaper to construct and operate and offers superior transmission. The coming of television, however, has again given the metropolitan region an attraction the smaller places cannot now offer to their people.

Newspapers. The wide availability of metropolitan dailies may account for the fact that one-fifth of the cities with a population above 25,000 do not have daily newspapers, more than half between 5,000 and 10,000 are without them, and only 10% of cities with a population of 2,500 to 5,000 have daily papers. Population base for this facility is set conservatively at 25,000.

Symphony orchestras. In the United States there are only 16 symphony orchestras having 65 or more professional musicians, and giving 20 or more concerts a year. All but one of these are in cities of 250,000 or more. But more than three-quarters of all cities over 100,000 have some kind of symphonic organization. The minimum population base seems to be about 50,000. In the smaller cities, Mr. Duncan points out, the organization's activities "must reach, proportionately, a much larger segment of the population."

Motion pictures. Movie theaters increase in number with city-size, but where a city with a population of 2,500 to 5,000 has a theater for each 2,400 on an average, the city with a population of over a million has one for each 10,000. Early release and wider variety tend to favor the larger places.

8. retail facilities

Census figures for 65 kinds of retail business disclosed enough to estimate minimum population bases for retail specialization. With the exception of jewelry, silverware, clocks, and women's apparel, requiring around 100,000 for specialty shops, "a city of no more than 50,000 will have almost the entire range of retail types represented in the classification used here."

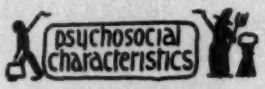
9. public safety

Cities of over 50,000 (not necessarily the very largest) have a higher incidence of crime even though per capita expenditures for public safety regularly increase with city-size—the largest cities spending three to four times as much per capita as the smallest, with their police forces being about twice as large in relation to population.

As for fires, there are balancing factors: more chance of having a fire in smaller cities, against a greater loss from fire when it does take place in larger cities. Expenditures increase per capita with city-size, but the biggest fire departments, relative to population, are found in cities of 50,000 to 250,000.

On vulnerability in war—every increase in size makes a city easier to hit and, generally, more attractive as an enemy target. The desirable maximums of population of 50,000 and 5 square miles are quoted from the recommendations of the National Security Resources Board for new urban development.

10. psychosocial characteristics



Under the weighty title to this section is ranged the distribution of "eminence groups"—chiefly about the periphery of the largest cities, and, in the case of writers, around our largest city, New York. The Who's Who concentration begins to grow heavy upon reaching the 250,000 population center. Mr. Duncan quotes Edward Rose to the effect that living in big cities gives some people a sense of being "in the center of things" and "close to the sources of innovation and intellectual achievements."

Conclusions

If a criticism of this conscientious and much needed research were ventured here, it might be to the effect that, like all of those students of society seeking to match in objectivity and accuracy the work of physical scientists, Mr. Duncan tends to neglect or ignore the power of the wish for better things, and the enormous role which human attitudes have played and may still play in redirecting human energy and reallocating the expenditure of wealth. An improvement in the quality of living creates "quality people" who are then not content to continue with what exists merely because it does exist. An example chosen from among the many available is Oak Ridge, Tenn., which, though it has only 30,000 people, nevertheless has a symphony orchestra.

But, in general, Mr. Duncan's objective is reached by his book. He sought to discover if, on the basis of existing conditions, there is justification for naming a certain city-size as the best. His answer is no, not yet. We need more facts and better ways of dealing with them.

All the same, there is much comfort in this thesis for the advocate of the city of limited size. As a consequence of this study the city of 50,000 (with some 10,000 or 20,000 above or below) appears as a possible candidate for the best size, granting a more stable, better educated, economically secure people. There appears to be no fundamental reason why a city of such size might not come close to the ideal as a place to live, work, and play, especially if it achieves good working relations with similar communities in its area.

Bomb-proof Automatic Water Pumping

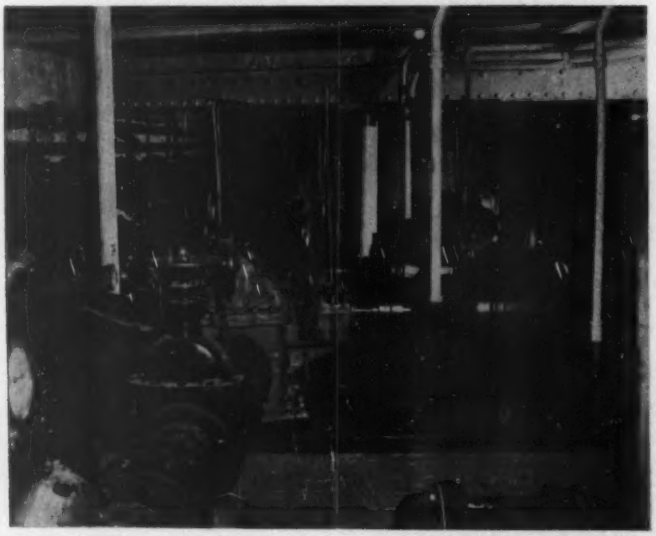
Park Ridge, Ill., builds a pumping station with standby diesel power in a safe underground location

By DESOTO B. McCABE, JR.
City Manager
Park Ridge, Ill.

City Manager D. B. McCabe, pointing, explains the operation of the Autocon panel to Mayor Alfred P. Haake, at his left, and to Alderman Wenford Rickman, at his right.

EMERGENCY diesel power for Park Ridge, Ill., a city with a population of 16,510, has helped convert a manually controlled pumping station to a fully automatic plant. In addition, the pumping station, located underground on the site of the old city hall, is ideally situated to withstand possible bomb damage in the event of an aerial attack.

The city's water system has no elevated tank or standpipe. Consequently, the automatic element eliminates possible water failure under emergency conditions and, at the same time, streamlines an outmoded method of trying to control pump capacities to match load conditions. Our old water-pumping station was rather asthmatic—it could produce a pressure of only 25 pounds per square inch. Consequently, homes in several sections of the city could not get water in connections above the ground floor during peak periods. This is no longer the case with the new installation.



A photograph of the interior of the pumping station, which is located underground; through the doorway at the rear is the diesel-electric generator.

Labor Saving Involved

The plant is designed to provide an adequate water supply for at least 20 years and to cope with a potential population increase to 65,000 persons. A Caterpillar D130000 diesel-electric set, generating 75 kilowatts continuously, provides standby power in the event of city power failure. An "Autocon" automatic-control switch panel governs the pumping operation. This control will give us a direct annual saving in labor of $10,000.

The City of Park Ridge is fed by two main lines from Chicago: one a 12-inch and the other a 24-inch line. These lines serve the 2,000,000-gallon underground reservoir adjacent to the pumping station. A 15-foot level is maintained with a working capacity of 725,000 gallons.

Supplying Power

During standby operation, the diesel-electric generator will supply power for the 6-inch Goulds centrifugal pump driven by a 60-hp electric motor. In addition, it will supply power to oper-

ate the local police short-wave radio system, the police-station lights, the fire siren, and the pumping-station lights.

With the "Autocon" controlling the three large pumps, five possible steps are available.

Step No. 1 provides 2,270,000 gallons per day with the 6-inch pump.

Step No. 2 supplies 3.5 mgd with an 8-inch pump. This is the average daytime load.

Step No. 3 provides 5.47 mgd with a 10-inch pump. This capacity is ample at all times, except during peak summer conditions and fire-fighting loads.

Step No. 4 is a combination of Steps 1 and 3, with total capacity of approximately 7.75 mgd. This combination is required for peak loads.

Step No. 5 is for extreme emergency conditions and is a combination of Steps 1, 2, and 3, providing a total of approximately 8,000 gallons per minute, or a potential 11.2 mgd.

The pumping station is located underground beneath this modern town square.

The "Autocon" controls the operation through impulses received from a monitoring system in the community-service, or feeder, line. The water pressure is not permitted to drop below 48 pounds per square inch. If water usage increases to the point where the pressure drops, the "Autocon" immediately selects another step with more capacity. This action raises the pressure to the desired level. The same control is exercised when the water pressure increases to the permissible maximum.

In the event of a city power failure, the local Motorola police short-wave radio will obtain standby power from the diesel electric set. Power can also be transmitted to maintain the other police and fire department facilities.

Who Should Decide On Fluoridation?

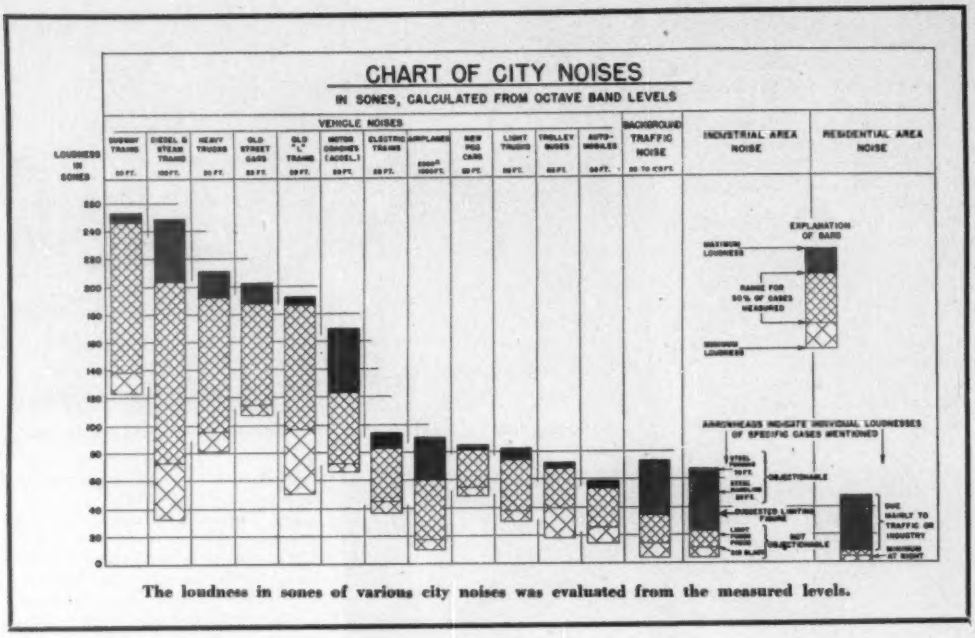
THE use of the public water supplies as a means of distributing the fluoride ion in order to control decay in teeth, particularly children's teeth, has been an exciting subject for at least a decade. In the eyes of dental-health authorities there seems to be mounting evidence that the fluoride ion, artificially added to water in the form of sodium fluoride, sodium silico fluoride, or hydrofluoric acid, produces the same results that it does when found naturally in waters in the proper concentration. Consequently one sees a growing nationwide demand for the treatment. This demand appears sparked to a large measure by dental-health authorities, and has received the blessing of such important groups as the American Public Health Association.

Nevertheless, we find water-works men objecting to its use. Peculiarly enough, at the recent American Water Works Association meeting at Miami, there seemed to be two schools of thought: one was of indignant opposition to the use of public water supplies as a means of furthering dental health; the other was cautious examination of fluoride feeding apparatus by superintendents who stated that their people wanted the work started, and they in turn wanted to be ready to start it.

Actually, the decision is not one for the water superintendent to make. The problem is one of dental health and properly should rest with dental-health authorities alone. If they feel that the process is beneficial, and if the public, with all the facts of costs presented, wants it, then the water superintendent is duty-bound to comply with such a decision.

Of particular interest is the fact that a special committee of the New Jersey Section of AWWA went on record as opposing the use of fluorides in water supply, and then found itself in the unenviable position of having its warning flatly rejected by the state Public Health Council which reaffirmed its belief in the treatment's dental benefits.

The water-works official adds many other chemicals to insure that the water meets public-health standards that help prevent bodily disorders. Certainly, he should again be willing to accept the advice of health authorities for a treatment that promises prevention of disorders to the teeth.



The loudness in sones of various city noises was evaluated from the measured levels.

Chicago Conducts a Noise Survey

By G. L. BONVALLET
Armour Research Foundation of Illinois Institute of Technology Chicago, Ill.

A PRACTICAL knowledge of noise has been slow in coming, and engineers have not previously had measurement methods which are reliable, simple, and rapid. Noise problems have increased until many persons feel that reduction of city noise is an almost futile task. With further education regarding noise conditions, enlightened designers and an informed public will realize that most city noises can be reduced.

A beneficial study of city noise was undertaken by the health authorities in New York City in 1930. Other similar studies have been made. In the 1950 noise survey of Chicago, measurements and analyses were made of vehicle, traffic, residential-area, and industrial-area noise. The work was done by Armour Research Foundation of Illinois Institute of Technology and the Greater Chicago Noise Reduction Council. It enjoyed the cooperation of the City of Chicago and the National Noise Abatement Council. The program was conducted in the public interest with the idea of formulating tolerable noise levels for writing or revising anti-noise legislation, in addition to the simple investigation of noise conditions.

The program involved not only the measuring of noise, but also evaluating their loudness. Sound meters measure the sound-intensity level, which has little correlation with loudness or with the objectionable nature of noise as evaluated by the human ear. These meters often indicate high levels for noises that are not loud because such noises consist mainly of high-energy, low-frequency components which may not sound loud. In the present survey, the sound meter was augmented by a filter to permit analysis of noise into various bands of frequencies or pitches for use in evaluating loudness.

A figure to denote loudness has been rather slow in being accepted beyond the realm of acousticians, and the reason has been the difficulty in obtaining such a figure. The term "loudness" refers to the subjective evaluation of what the ear hears, whereas the sound-intensity level is an objective measurement of a physical condition. The sone is the unit of loudness, and it is being used increasingly by noise engineers. To the ear, a noise of 100 sones in loudness sounds twice as loud as one of 50 sones, and a sound of 20 sones sounds twice as loud as one of 10 sones. One of the new types of streetcar, ten feet away, is about 100 sones at its loudest. An average busy office is about 20 sones. A quiet home, with some little noise, has a loudness of about 2 sones. This technique of noise evaluation, based on a method of Dr. L. L. Beranek, of M.I.T., has advanced to the stage where a simple addition of the loudnesses in several octave bands gives the total loudness in sones.

Vehicle and Traffic Noise

The present work substantiated the belief that noise from traffic affects more people than does industrial noise. There are more than 1,500 route miles of mass-transportation vehicle traffic routes in Chicago, and many people live close to them. Traffic noise not only is more prevalent, but is louder than most industrial noise. It is the predominant noise in many industrial areas, and noise conditions ascribed to a plant often are caused by vehicles identified with the plant. Even in relatively low-background-level industrial areas, traffic often is the background which is sometimes called "unidentifiable" noise. And finally, in residential areas not adjacent to noisy industrial zones, the

unidentifiable background noise generally is due only to traffic. Railroads are a common noise source which is tolerated by the public because it has been in the public picture for many years.

Mass-Transportation Noise

The noise of traffic is largely from railroad operations (if they may be called vehicles), street and elevated cars, motor trucks, and motor coaches. In general, older mass-transportation vehicles are noisy. These are being replaced with quiet modern equipment as rapidly as possible. The new PCC street cars and the new trolley and propane buses are relatively quiet.

Motor trucks are noisy, even when new, because of defective or inadequate silencing systems. The condition is particularly objectionable when starting. Although motor trucks measured in this work were in metropolitan areas, they are just as loud, and may seem louder, on rural highways. These vehicles, therefore, are particularly offensive, especially at night.

Motor coaches are not the most annoying noise sources, but the fact that they often operate on boulevards that are otherwise quiet, is reason for such complaint. This is especially true at night, when traffic and other daytime noises subside. The modern torque converters and silencing systems of motor coaches, in many cases, need further attention to reduce noise. Many of the vehicles are objectionable mainly when accelerating.

Passenger automobiles, especially when new, are not accused of being noisy. Casual listening in traffic lanes, however, indicates that even some new cars have insufficient or defective silencers, especially at lower speeds. At higher speeds, tire and wind noises predominate.

Streetcar and similar vehicle noises were measured under average running conditions, and not while crossing tracks or while sounding warning signals. The range of loudness for background traffic noise shown in the chart is for general conditions when a number of vehicles are operating in the area but not close to the measuring equipment. The background traffic condition, therefore, is not so loud as individual vehicles at relatively close distances such as 20 feet.

Industrial Area Noise

The public complains about industrial noise, but may condone the louder traffic noise. There may be some reason for this, especially in cases where the industrial noise is either intermittent or identifiable as being from a punch press, forging hammer, or other loud machine. The noise of a vehicle, however, may be accepted as necessary, or possibly may not be considered offensive, because of its characteristic gradual increase to a maximum and decrease to a minimum.

Industrial noise, exclusive of associated traffic, is far less prevalent than traffic noise. Much of Chicago's industrial and manufacturing area contains no noise sources, and many operations are quiet.

Industrial noise generally was found to be below the existing background noise. After measuring many industrial noises outside of plants, it is estimated that only 10% of these were objectionable. As a result of listening to hundreds of cases, it is believed that the number of objectionable cases is nearer 4%.

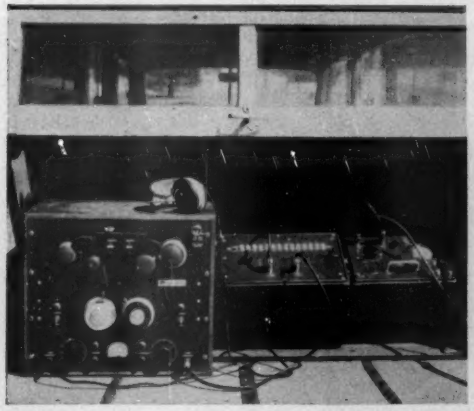
Noise levels of the offenders indicate a spectrum which could be suggested as a legal limit for objectionable industrial noise. The octave-band levels for such a limiting condition indicate a loudness of 40 sones at about 25 feet from the property line. The chart shows the position of this loudness figure in relation to other industrial noises.

Residential-Area Noise

The background noise in relatively quiet residential areas consists of local or distant traffic noise, industrial noise at some distance, and such noises as children at play, building construction, street repairs, venders, dogs, and miscellaneous sounds. When homes are near factories, industrial noise may comprise the background. When residences are near streets with heavy traffic, noise of vehicles may be relatively great. For the greater part of Chicago's residential areas, industrial noise is not heard, but

Why Conduct a Survey of City Noise?

The need for scientific information on noise in metropolitan areas is great. The people who plan and run our cities need more factual data if they are to take effective action against urban clamor. This was the reason for a recent survey of noise in Chicago. The more than 50,000 readings of city noise resulting from the survey became charts and graphs that can help civic authorities write ordinances and make other plans.



Magnecorder noise-measuring equipment. Sound meter and filter are shown at right. Magnetic recorder at left was not necessary for this type of measurement, but was used to record conditions and count vehicles. Above: Train noises have been tolerated by the public for a long time. Here it is being measured for the survey.

a traffic-noise background may or may not be audible, depending on the traffic density and the distance.

Conclusion

Probably the most important conclusion is that city noise requires study by competent people and education on the part of administrators empowered to act. When authorities are fully aware of noise conditions, they are in a position to consider various solutions. Consumers have refused to purchase noisy home appliances and related equipment. This same public, when educated to the needlessness of most noise, will demand quieter operation of vehicles and industry.

Now, how is quiet to be obtained? First of all, ordinances should be passed which make use of the available noise yardsticks. Existing ordinances do not satisfactorily handle excessive noise. Then the various individual noise problems must be brought into the picture when planning, expanding, or modifying communities. Quieting of all possible noise sources must be considered early. An article such as this can only mention generalities in this regard.

Traffic noise requires most attention because of its prevalence. The only mass-transportation and other vehicles which should be purchased are those that meet noise standards. Alternate routes around towns or around districts can be provided for heavy, noisy traffic. To reduce associated noise—especially horn blowing and accelerating—traffic routes should be planned with attention to stopping, starting, and intersections. In track systems, perhaps speed should be reduced when engaging switch blocks. Even better would be to minimize this in the planning stage.

The measuring equipment traveled hundreds of miles in this station wagon.

In the early stages of plant location consideration should be given to minimizing industrial noise. One-story plants are less noisy than multiple story buildings, and the presence of trees, shrubbery, and grass also reduces noise. Special silencing means are required for very noisy factories.

Forward-looking manufacturers of mass and other transportation vehicles are spending much time on these problems and are supplying quieter operating vehicles. Similarly, managers of most noisy plants are trying to reduce their objectionably loud operations.

It is the earnest hope of those concerned in the Chicago survey that their efforts have resulted in a little more information about noise conditions. It is further hoped that this information will reach those people who are in a position to take acton.

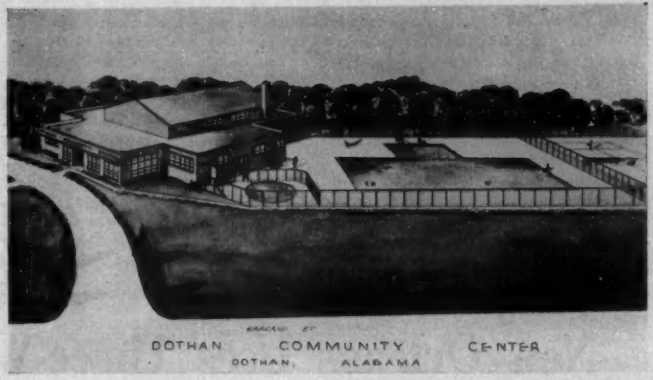
Toledo Gets Juvenile Court and Child Study Institute

THE most modern ideas in institutional construction will be incorporated in the $1,500,000 Juvenile Court and Child Study Institute of Lucas County, Ohio. Construction will begin in August and the building is expected to be completed in 1953.

Designed by Bellman, Gillett & Richards, architects, the building will occupy the present site of Toledo's old YMCA now being razed. The structure will be in the shape of a T, with frontages of 160 feet on 10th Street, and 86 feet on Michigan Street, and with 180 feet of depth. The plan calls for a basement and three stories on 10th Street and a basement and two stories on Michigan Street, a total of 73,500 square feet of floor space. Also included in the plan are living quarters for 40 boys and 24 girls, as well as offices, recreation areas, court rooms, and class rooms. An inner communication system will be installed for administrative and entertainment purposes.

Members of the architectural firm and the Building Commission spent more than a year in research and visited Cleveland, Columbus, St. Paul, and Pittsburgh to study plans of similar institutions.

Design of the planned Juvenile Court and Child Study Institute



The Dothan Community Center, now under construction, features swimming pools and indoor and outdoor recreational facilities for multi-purpose use.

Two Complete Community Centers

Nearing completion in Dothan, Ala., each center has recreation building, swimming pool, outdoor multiple-use paved area, and athletic field

DOORS of two of the finest recreational centers in Alabama, to be known as the Dothan Community Center and the Lincoln Community Center, will open in the City of Dothan in October. The centers are of special interest because of their economical planning.

The city officials of Dotham were well aware of the value of recreation programs and recreational facilities, and awarded contracts on January 26th of this year for the construction of the new community centers, one for the white population and the other for the Negro population. The facilities were considered essential to the welfare of the community and the war effort by the National Production Authority.

The planning of the two projects was carried out under the direction of the Charles M. Graves organization, park and recreation engineers, of Atlanta, specialists in the designing of parks, playgrounds, recreation areas, swimming pools, recreation buildings, and other types of recreational facilities. Mr. Graves was assisted on the projects by a staff of experts in the various related fields.

The City Commission, consisting of James T. Thrower, President, J. R. Adkins, and J. H. Brennan, cooperated closely with the Park and Recreation Board on the development of the two areas, with able assistance furnished by E. J. Ford, Dothan City Engineer. Members of the Park and Recreation Board are Clyde O. Lovern, Chairman, W. C. Morris, A. V. Lee, W. M. Evans, and Billy Mullins.

The Dothan Community Center is located on a recently purchased 12-acre park area adjoining the 16-acre high-school site. The area to the north includes a wooded section suitable for family and group picnicking and day camping. A council circle will be provided, which can be used as an outdoor classroom for school groups.

The Lincoln Community Center, located at the corner of Bayshore and Lake Streets, also includes a very complete development. To the south of the building will be located a large playing field with an official-size baseball diamond, suitable also for accommodating two softball games or a football game. To the west side of the building is a multiple-use concrete-paved area, 110 by 120 feet, enclosed with a 10-foot chain-link fence. This area will be lighted to promote night use for such activities as roller skating, volleyball, basketball, paddle tennis, deck tennis, shuffleboard, outdoor dances, outdoor meetings, community sings, etc.

Architects' sketch of Lincoln Community Center, showing large playing field at rear of the building and paved area, upper left, which can be lighted at night.

Gymnasium-Auditoriums

The combination gymnasium-auditoriums in both centers have been designed so that they can be useful for a variety of sports and community activities. The Dothan Center's floor-size is 61 by 86 feet, and the Lincoln Center's gymnasium area is 71 by 96 feet. Telescopic folding bleachers are provided so that only 32 inches of wall depth will be occupied when they are not in use. Both centers include kitchen and snack-bar facilities.

The Dothan Center also includes two club rooms, separated by a "Modernfold" wall, which can be drawn aside to provide a larger multiple-use room, 24 by 31 feet. The building also has a

room 34 by 100 feet, planned for six bowling alleys, with theatre-type seating for 45 persons. Until these alleys are installed, it can be used as a teen-age center for parties and dances.

The bath-house facilities with each swimming pool have been designed in conjunction with the adjacent community center building, so that one set of dressing rooms can serve both the gymnasiums and the pools. The dressing rooms open out on to the swimming-pool areas. Basket check rooms separate the dressing facilities, which are equipped for both winter and summer.

The swimming pools are both adequate for all types of official A. A. U. swimming meets. Refinite swimming pool accessories are used throughout. The filter equipment consists of the most modern water-treating apparatus, manufactured and installed by the Refinite Corporation, of Omaha, Neb., including diatomaceous earth filters and chlorinators to insure that the pools are kept in an attractive and healthful condition at all times. Adequate overhead and underwater lighting is being installed to promote and facilitate night use. Seats for spectators will be provided.

Each center also has a small wading pool, ranging in depth from 6 to 18 inches, planned for the very young children. These areas, including sandboxes, are enclosed by 6-foot chain-link fences for added safety, as are the pools and their surrounding concrete-paved areas.

New Orleans Uses Three-Way Approach

To Planning and Zoning Problems

By LOUIS C. BISSO, *Director*
City Planning and Zoning Commission
New Orleans, La.

A GOOD question for any planning commission to ask itself is "How are we attempting to coordinate 'what is' with 'what should be'?" To answer this question, it is necessary to go back to the problem of what constitutes efficiency—and *this* answer is: order and control. You must first put your house in order; then set up the necessary controls to keep it in order.

The master plan, or comprehensive plan as it is sometimes called, with all of its phases and integrated parts, should be "the order." This represents what should be accomplished, and when.

Planning Advisory Committee

As to controls, in most cities there are many boards and commissions duplicating work and effort in attempting to plan. In New Orleans, the planning commission brought about unification of all department heads, public and semi-public, who have a voice in planning. This was accomplished by the organization of the "Planning Advisory Committee," of the City Planning and Zoning Commission, which has proved very successful. A meeting is held once a week and well-rounded, comprehensive opinions are obtained for each planning item—whether it is a street proposed for voiding, or a river bridge-crossing. This has contributed much toward the solution of planning problems, since it inculcates into the department heads the fact that the master plan is "our plan"—not the "planning commission's plan." It is surprising how deeply this committee delves in order to answer the eternal planning question, "To what extent should we temper idealism with practicability?"

In the field of zoning the same results were accomplished through the organization of the "Zone Law Enforcement Committee," whose objectives are to improve on ways and means for better zoning enforcement.

Among the officials who serve as Committee members are the Director of the Building Division, who issues permits and enforces the law; Zoning Board of Appeal and Adjustment members; Police Department officials; the municipal court judge, and others. As an outgrowth of the Committee's functioning, many advantageous steps have been taken in the city. Police cars patrol the neighborhoods and report new construction. Sales-tax licenses are not issued until cleared with the Building Division. Filing of affidavits has been clarified. Continuances of long, drawn-out court cases have stopped and immediate trials are insured. These are all typical cases of what can be accomplished when departments begin to cooperate and coordinate their activities.

Citizens Committee

A third committee, as yet unformed, will be the "Citizens Over-all Committee," which is most essential as a connecting link between the City Planning and Zoning Commission and the general public. This committee will assist particularly with the zoning, recreation, schools, and housing plans. It is now in the process of formation and will be composed of representatives from the various large city-wide organizations such as the Chamber of Commerce, Young Men's Business Club, etc.

Without these committees or their substitutes, it can readily be understood how planning commissions can become completely lost or, at least, operate in a fog. The committees have proved most valuable to the planning commission in New Orleans since the city's construction program is heavy. Also, the operating levels of government carefully screen all projects before presentation to the planning commission, thus coordinating paper work with construction. The basic concept of planning "with" and not "for" the people is beginning to materialize.

Critical Materials For Municipal Construction

FORMS and instructions are available from the National Production Authority to be used in securing permission for construction projects in compliance with the Controlled Materials Plan, which allocates the uses of steel, copper, and aluminum.

Municipalities needing assistance on specific projects should contact the field offices of agencies named below, or send their questions and application forms to the appropriate central office in Washington, D. C.

School and library construction—Office of Education, Federal Security Agency, Washington 25, D. C.

Hospitals and health facilities—Public Health Service, Federal Security Agency, Washington 25, D. C.

Housing construction, alteration, and repair—Public Housing: Public Housing, Administration Field Offices; Private Housing: Federal Housing Administration Field Offices

Electric power—Defense Electric Power Administration, Department of Interior, Washington 25, D. C.

Roads and streets, construction and maintenance, and bridges, tunnels, etc.—Bureau of Public Roads, district engineer, Field Offices (through State Highway Department)

Air navigation facilities, civil airports—Civil Aeronautics Administration, Attention: W-30, Washington 25, D. C.

Water and sewer facilities—Water Resources Division, National Production Authority, Washington 25, D. C.

Facilities for domestic transportation; storage, and port facilities—Defense Transport Administration, Washington 25, D. C.

Wabash, Ind., Gets Master Plan

By LAWRENCE V. SHERIDAN
Planning Consultant
Indianapolis, Ind.

WABASH, IND., a city of about 11,000 inhabitants and typical of midwestern industrial and trade communities, exhibits the trends of urban development evident in many areas. These trends forecast the spread of the city over a much larger area, accompanied by more expansive industry and greater dispersion of residential development.

The City Plan Commission of Wabash recognized the desirability of providing a guide for future urban development to ensure desirable neighborhoods within the expansion areas of the city. The City Plan Commission, of which Mayor E. A. Timmons is President and City Engineer G. L. Watson is Secretary, directed preparation of the Master Plan.

A thorough study of the environs two miles beyond the city was undertaken under the authority of the Indiana Planning Statute. With the aid of aerial photographs, the topography was studied to determine land suitable for different types of use.

A major thoroughfare plan was established based upon existing highways and proposed streets, following section and half-section lines. Where overflow land or rugged areas were encountered, alignments were adjusted to topography. A by-pass for U. S. Highway 24 was included to relieve city streets of heavy traffic. The major street plan was designed so that it may be adhered to closely in the future.

Neighborhood Design

Major thoroughfares divide the two-mile area into neighborhoods averaging 160 acres, or one-half mile square. The master plan includes a suggested design for each neighborhood, with minor streets adjusted to topography. Each plan illustrates the principles of design which will produce desirable neighborhoods. Proposed sites for local playgrounds, schools, and shopping centers are indicated as integral parts of the neighborhood design.

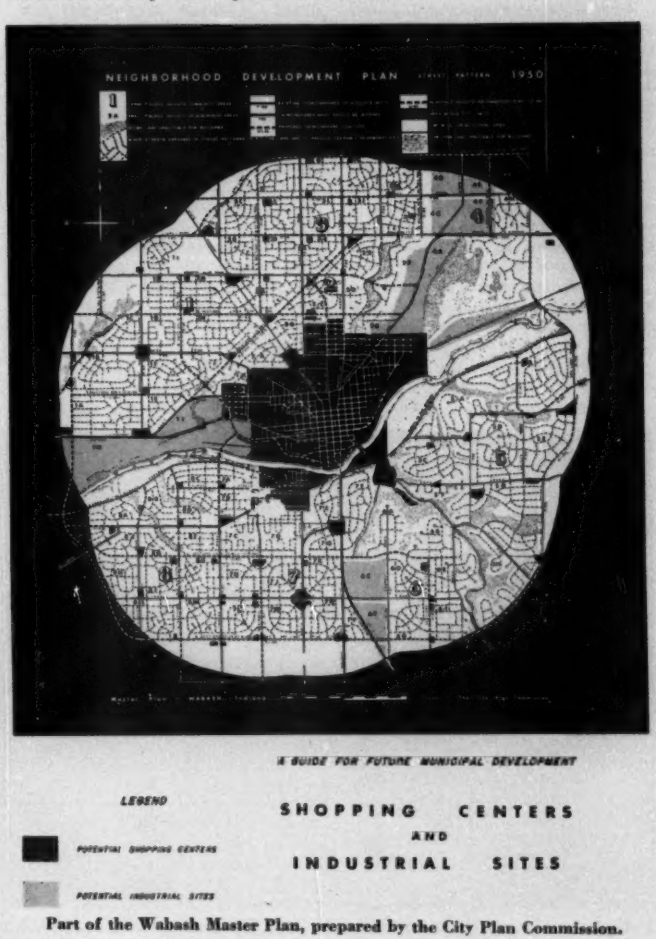
It is not expected that the city will grow rapidly over the entire two-mile area. The purpose of the Neighborhood Development Plan is to provide a guide for development wherever and whenever it may take place. It is not intended that neighborhood plans will be rigid plans, but rather that they should emphasize principles which will produce good neighborhoods. The City Plan Commission believes that if people understand the principles involved, development of a high character will ensue.

The plan includes consideration of adequate areas for future industrial development. A zoning ordinance covering both the city and the two-mile area has been adopted. Residential areas in the two-mile area require 16,000 square feet of lot area per family if public water supply and sewers are lacking and 8,000 square feet per family if public water supply is available.

The Zoning Ordinance covering both the city and the two-mile area has been adopted in accordance with the Indiana Planning Act. The Act has been interpreted as giving authority for such extraterritorial zoning. However, if counties adopt zoning ordinances, the cities do not have jurisdiction beyond the city limits; but until the counties act, the cities can proceed.

Wabash has also adopted ordinances establishing the Master Plan as a guide for future municipal development. A report on the plan, developed in summary form designed to emphasize principles and the elements of the plan in an easy-to-read style, has been published and is now being used in the one city and two county high schools and by civic and business groups.

The appendix features a series of charts, which are a part of the zoning ordinance. The ordinance defines the boundaries of districts on the maps, but the specifications are all on the charts. Thus the approach is through the type of use rather than the district. An applicant for a permit need look no farther than the chart to find out all he needs to know about the ordinance insofar as his particular building is concerned.



Part of the Wabash Master Plan, prepared by the City Plan Commission.

Assessments Pay for Snow Removal

Work starts with the storm; the city uses heavy equipment of all types and clears the streets promptly

By LEON FAUCHER
Snow Removal Superintendent
and
J. M. BOUCHER
Chief Accountant
Quebec, Canada

DURING the winter of 1949-50, Quebec had a total snowfall of 103 inches, and 10 inches of rain that froze into ice; yet it was considered an "open" winter. The cost of removing the snow was $460,000. This covered a permanent payroll for 300 men, maintenance of 11 large mechanical loader-blowers, 5 small loader-blowers, 52 trucks, and other machines.

Last winter, new equipment, including a few large trucks and truck-plows, another large Sicard loader-blower, and 5 new jeep-plows for sidewalk clearing, boosted the cost to $500,000. The snowfall was about 125 inches, close to the 72-year average.

Night Plowing Continuous

Quebec, with a population of 200,000 (1941 census figure), has 115 miles of streets and comprises an area of about 25 square miles. Its snow-removal job always "starts with the storm." Night plowing of main streets is continuous, and loader-blowers follow close behind the heavy truck-plows as soon as a traffic lane is cleared. The night operations are favored.

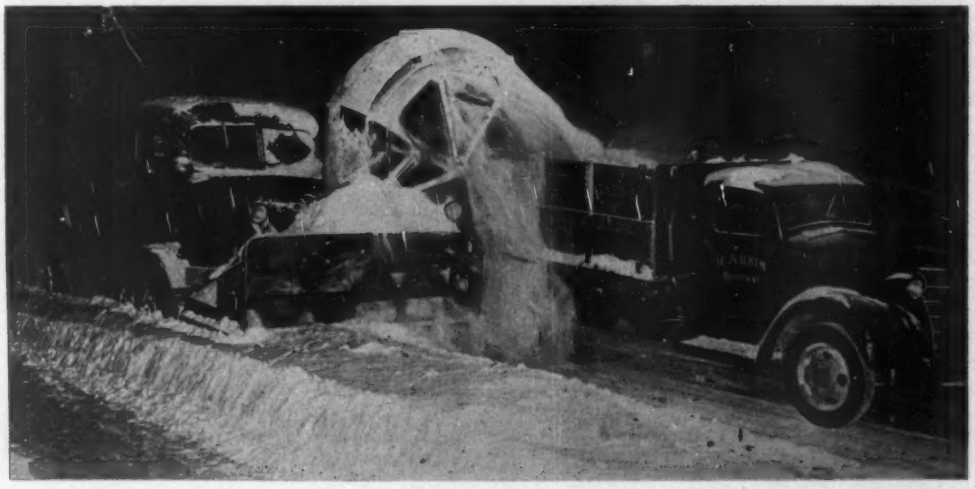
Snow-removal by-laws are rigidly enforced. Where the city or city contractors are not authorized by property owners to clear the snow from the streets and sidewalks, the property owners themselves must arrange for the clearing and haulage. The penalty for nonobservance of this regulation is a maximum $40 fine or one month in jail.

Property owners are assessed on a property-frontage basis for snow-removal costs for the season, and rates are fixed each year by the snow-removal accounting department.

In general, the uptown business and residential sections pay the city on a property-frontage basis for the entire snow-removal and ice-conditioning job, on both streets and sidewalks. Apart from the main business streets, the lower town streets are cleared by city or contractors' street plows, and property owners in those sections arrange for their own hauling and sidewalk clearing. Parking of cars overnight on all streets is rigidly prohibited in winter. Police department tow trucks enforce this regulation. Motorists must pay for towage.

It is the responsibility of district superintendents to make a pre-season checkup of all streets in their own districts to see that any obstructions that might damage plow blades or loader-blowers are removed from the pavement. This includes stray bricks, bits of rock, timber, protruding curbs, manhole covers, pipes, building blocks, or other debris.

Heavy equipment is favored by city engineers. After a deep snowfall, where wet snow freezes into ice, or where deep, heavy slush must be loaded into trucks, one heavy snow-loader-blower



Night operation means faster clearing. Note that both sidewalk and street plows have passed through this street.

may do the snow-removing job better and with less repair cost than two smaller units. Machines designed for loading only are not used in Quebec. Some were tried out, but were found too slow. Some smaller equipment is used in the narrower streets in the older part of the city, and in open or park areas.

Ice-plowing equipment consists of special ice-cutting blades, with teeth, attached under the center of the heavier plow trucks, rather than in front, and controlled by hydraulic pressure. Rotary loader-blower blades also are equipped with detachable ice-cutting teeth for ice plowing. However, many horse-drawn ice plows and snowplows are still used for sidewalks, on steep hills, and in narrower streets. Horse-drawn sidewalk snowplows are slowly being replaced by Jeep plows.

Cinders or Sand Used on Ice

By-laws require spreadng of cinders or sand on icy pavements, and sand on sidewalks, either by the city or by property owners. Cinders are supplied to the city by large hotels, free of charge. Chemicals are used very little. Pavement breakers, operated by compressed air, have been tried for breaking heavy ice, but these have been discarded largely because it was found they were breaking up pavement as well as ice. Much use is made of the pickax in ice-clearing work on business streets.

About half the snow removed from the streets is dumped into the St. Charles and St. Lawrence Rivers, from wharves reserved for that purpose. The city owns most of the snow-dump locations and rents the others. Snow is not dumped in parks.

Dumping of snow into storm-sewer manholes is not a general practice. In mild weather this may result in flooding cellars by backing up sewage or drainage water into store or home drainpipes. Such snow disposal operations cannot be conducted in the narrower or busier business streets without blocking traffic to a great extent. For this reason, snow is dumped down manholes only in some of the wider streets in the uptown area.

Trucks and Other Equipment

Trucks and loader-blowers, scrapers, and truck-plows are usually equipped with both snow tires and heavy chains, and are able to operate on steep hills. City hauling trucks are largely of 5- to 7-ton rating, with four-wheel drive, and 10-cubic-yard bodies of heavy steel construction. Since the largest trucks can be loaded by the blower method, at the rate of one every 30 seconds, the efficiency and speed of the snow-removal system depends largely upon the number and size of the hauling trucks in use with each loader-blower. Each loader-blower is serviced by 15 to 20 trucks, although as many as 25 trucks may be used to service each loader-blower during or after heavy storms.

Loader-blowers used in Quebec can cover an average of five miles of streets per day after a 12-inch snowfall. The city snow-removal department owns 11 heavy Sicard loader-blowers, all with four-wheel drive; 2 Sno-Go machines, and 3 small Cyclone loader-blowers. It has, in addition, 20 large trucks, including 2 White trucks; 6 Ford trucks; 14 Sicard 4-by-4 (four-wheel drive) trucks equipped with plows in front and underbody snow scrapers, or ice plow blades; 3 International trucks, mostly of 5- to 7-ton rating and with 10-cubic-yard dump bodies, and 12 smaller trucks of 2-ton rating and with 2- to 3-cubic-yard bodies. Other equipment owned includes 5 Jeep plows, 2 International road scrapers, 5 small Caterpillar diesel tractor-plows, and 20 or more horse plows for sidewalk work. The three local contractors among them own 3 or 4 loader-blower machines, about 15 trucks each, and many small horse plows and ice scrapers. City engineers prefer the tilting-type snow-hauling truck bodies for dumping snow.

Windrows on Wider Streets

It has been found faster to plow the snow toward the middle of some of the wider streets, leaving traffic lanes open on both sides. This enables loader-blowers to operate down the middle of the street without obstructing traffic.

Most of the spreading of sand and cinders is done by hand shovel from trucks, at night when necessary. A cinder-spreading machine has been operating during the past winter with good results. Contracts for snow removal are awarded to the three contractors on a three-year basis. Contractors must maintain their own equipment.

The assessment of snow-removal rates to individual property owners throughout the city is no small task. However, the accounting work and calculation of rates has been simplified by the use of an unusually versatile electric calculating machine.

Statistics on which rates are based are gathered from district offices, and a staff of four clerks in this department is able to make up the rates for thousands of individual property owners each spring. These are forwarded to the city tax department, which mails out the bills at the end of each season.

A filing system has been worked out for each district. Day-to-day records are made of all operations, costs, repairs, replacements, machine and hand labor, as well as records of hauling costs, kept by city district offices, the three contractors, and private truck haulers. These are compiled continuously by J. M. Boucher, chief accountant for the snow-removal department.

Assessment work is simplified somewhat by the division of the six city wards, or four snow-removal districts, into 12 separate sections. Maps of each section show how property in each street is to be assessed. The streets are marked with colored crayons to indicate the type of snow-removal work to be charged against each property frontage.

Costs of snow removal in Quebec City may be higher than in many other cities of similar size because of the greater depth of snowfall over a longer period, but labor rates are lower. Machine operators employed by the city are paid 92 cents per hour, or $7.50 per day. City truck drivers receive $7 per day. Hand-shovel labor is paid 70 cents per hour. Private truck owners, who are paid by the city, get $3 per hour, or $1.25 to $1.50 per load if not less than 225 cubic feet, depending on the hauling distance involved.

Spreading of sand and cinders throughout the city after the frequent freezing rain storms costs as much as removing snow after the average snow storm. Large numbers of trucks and men must be pressed into service to sand a maximum of 65 miles of main streets and other side streets and intersections, as quickly as possible, in order to prevent serious traffic accidents on the many steep hills and at crossings. It is often necessary to spread sand and cinders along 35 to 40 miles of streets in a few hours to keep bus lines moving, taxis in operation, and to safeguard citizens' lives. Storage boxes for sand are placed at strategic locations throughout the city early in November, so there is no delay in sanding sidewalks on hills and other danger spots.

New Jersey Authorizes Local Health Districts

WITH the signature of Governor Alfred E. Driscoll, New Jersey's Local Health District Act has become Chapter 69 of the Laws of 1951.

This forward-looking legislation provides two practical methods by which local municipalities may join together in providing needed local health services. Muncipalities may either create consolidated local health districts within a county in a manner similar to the formation of school districts, or may create local county health districts.

The act preserves the principle of home rule and provides that a municipality may withdraw from a district if it wishes. The act further provides that consolidated local boards of health and county local boards of health may determine for themselves whether officers and employees shall be included within the classified civil service.

Printed copies of the new law are available from the New Jersey State Department of Health, State House, Trenton 7, N. Y.

Police Work

In "The Philadelphia Holocaust"

How the disasters of two imaginary atom-bomb bursts were handled by the Philadelphia Bureau of Fire was narrated in the May issue. Here is the parallel story of action by the Philadelphia police.

UPON the sounding of the red air-raid-warning signal at 5:36 a.m. on the 13th day of a certain month, all off-duty sergeants, patrolmen, and detectives proceeded immediately to the nearest police district station-house for orders. Street sergeants assigned to police cars equipped with public-address systems of which there are 34, toured their assignments, making the following announcement: "An air-raid warning has been received. Take shelter immediately!"

At 5:50 a.m. the police in the northeast section of the city reported that an atomic bomb had exploded about 2,500 feet in the air and there were many fires burning, and requested that men be sent to that area to make radiological and chemical surveys. The request was radioed to Main Control Center, with the suggestion that personnel of Division 7 be ordered to the scene.

Police Report Another "Bomb Burst"

At 5:55 a.m. the police in West Philadelphia reported a burst high in the air, that the Main Control Center was demolished, the Pennsylvania Railroad across the Schuylkill was inoperable, buildings were leveled, and there were many fires. The police stated that Pennsylvania Hospital for Nervous Diseases ("Kirkbride's") had been damaged to the extent that the inmates there would have to be evacuated; Division 6 to prepare for the evacuation of these inmates. They also asked for men to make a radiological and chemical survey. This request was radioed to the Main Control Center, with the suggestion that Division 7 be notified to send the necessary personnel to make this survey.

Meanwhile, a survey from the police telephone room in City Hall revealed that the city teletypewriter system, through which police information is transmitted to every station and unit of the force, had been rendered inoperative. In place of it, the police motorized mail-service was used. The Bell telephone lines leading from the various police station houses to the police telephone room in City Hall were disrupted. Fortunately, Philadelphia has a city-owned telephone system entirely separate from that of the Bell Telephone Company. This was not disrupted, except at the six station houses that were destroyed. There was no electric power in any station house to provide illumination at nightfall. Steps were taken to obtain 100 half-mile-beam searchlights from the stock-pile.

On the Scene

By 6:30 a.m., the police radio room was flooded with calls from the police in the West Philadelphia area and the northeast section of the city, with the information that dead and wounded were strewn all around; that for more than two miles all buildings were leveled to the ground; that police, wardens, doctors, and conveyances of all kinds in large numbers were needed immediately. These requests were made known to alternate Main Control and Region 4 Control Center, stating the location where help should report. At 7 a.m., Main Control advised that Dr. Reeves, of Division 5, was arranging for immediate help; also, that the Deputy Chief Air Raid Warden was arranging to send 1,000 wardens to each emergency area with instructions to report to the officers in charge.

Main Control Center and Region 4 Control Center were informed that the police radio had dispatched 15 patrol cars to the northeast area and 15 to the West Philadelphia area—10 police cars equipped with public-address systems, and 20 two-way radio cars for communication purposes. In addition, 300 patrolmen were dispatched to the northeast and 300 to the southwest. Thirty-five motorcycles equipped with two-way radio communication were also dispatched to each area to escort vehicles conveying injured to hospitals.

The first estimate of casualties came from the Inspector of Police at the northeast "incident" at 7:40 a.m., stating over 75,000 injured and about 40,000 dead. Five minutes later the Inspector of Police at the southwest area reported 75,000 dead and 100,000 injured. At about 11:30 a.m., these figures were revised as follows: northeast, 57,000 dead and 124,000 injured; southwest, 107,000 dead and 156,500 injured.

The Inspector at the northeast "incident" requested 18,000 wardens and 1,400 vehicles (with litters). At the West Philadelphia incident, the request was for 19,000 wardens and 2,100 vehicles (with litters).

Calls came from both disaster areas for foodstuffs, coffee and other hot liquids, and milk and soft drinks.

Next significant reports were that all hospitals and improvised hospitals in both areas were filled to capacity and no beds available. Then came word that the mortuaries were filled to capacity. Where should the injured and the dead be taken?

Prearranged Plans for Homeless and Destitute

Meanwhile, there were other developments. The police were directing all men, women, and children who were destitute and in need of food and other help to the nearest shelter, in accordance with prearranged plans. Police Garage was instructed to visit both areas for the purpose of replenishing the oil and gasoline needed in police vehicles. The Chief Identification Officer sent his personnel to the various mortuaries to obtain fingerprints of the dead and compare them with the prints on file in the Bureau of Police for identification purposes.

By 5 p.m., Inspectors in both areas requested replacement of all personnel,

including wardens, auxiliary police, regular police, and men assigned to vehicles used as ambulances. All help was physically exhausted. Both areas requested that 200 half-mile-beam searchlights be sent to the scene for illumination.

The Assistant Superintendent of Police at the Main Control Center informed Mayor Samuel, the Civil Defense Coordinator, that all forces were exhausted and suggested that the Mayor request the State Civil Defense Coordinator of the Eastern section of Pennsylvania to arrange for the assignment of 4,000 troops of the Pennsylvania National Guard to this area for policing purposes; 20,000 men to act as wardens, and 1,000 men able to drive automobiles.

In both blasts the police loss totaled 16 vehicles, 6 station houses, 1,000 regular policemen, 2,000 auxiliary policemen, and 20,000 wardens.

Dry Ice Freezes 6-Inch Main

By A. B. UZZLE, JR.
Director of Public Works
Hickory, N. C.

RECENTLY, John L. Ford, of the Ford Meter Box Company, Inc., of Wabash, Ind., sent out a folder telling of experiments in freezing a section of service pipe so valves could be changed, lines extended, and repair work done with a minimum of digging and effort. Since then, we have regularly used this method in which an amount of dry ice the size of a billiard ball, for ¾-inch and 1-inch services, and slightly more for 2-inch lines, is pulverized and mixed with one-half pint of gasoline, and the mixture placed around the service pipe. The gasoline causes close contact of the dry ice with the pipe. It is best held in place by wrapping a piece of old inner tube around the service pipe and clipping it together with clothes pins. Three to six minutes are required to freeze a plug of ice in a pipe up to and including 2 inches in diameter. This confirmed Mr. Ford's experiences.

Experiment on Hydrant

But would this method work on a pipe of a larger size? We had an old fire hydrant on our City Public Works Service Lot which was no longer needed, and which was very much in the way of trucks driving about the lot. So it was decided to try to freeze the 6-inch hydrant branch and remove the hydrant. We did not know, of course, how much dry ice to start with, but decided to use 40 pounds mixed with 3 quarts of gasoline. This mixture was placed about the 6-inch pipe, after first cutting an oil can in half lengthwise and placing half the can about and underneath the 6-inch pipe, and caulking the space at both ends of the can with oakum in order to hold all the dry-ice-gasoline mixture in the half-can. This can was 14 inches in diameter and 22½ inches in length.

More dry ice was needed, so we added 10 pounds with 1 quart of gasoline. At the end of 30 minutes we opened the hydrant slightly in order to find whether an ice plug had formed. It had not. At the end of one hour, 1½ hours, and 1¾ hours we again tested, but still the solid plug of ice had not formed. We found it necessary to add another 12 pounds of dry ice with 1 pint of gasoline, making a total of 62 pounds of dry ice and 1⅛ gallons of gasoline. At the end of 2 hours and 18 minutes we tested and found that a solid plug of ice had formed in the 6-inch pipe and no flow came from the hydrant. We proceeded to remove the fire hydrant and plug the hydrant branch. If we had not been able to remove the hydrant in this manner, it would have been necessary to cut a one-block area out of water service, as well as having to contend with much water from the pipe. Several years ago, when this system was put in, valves were not used plentifully enough.

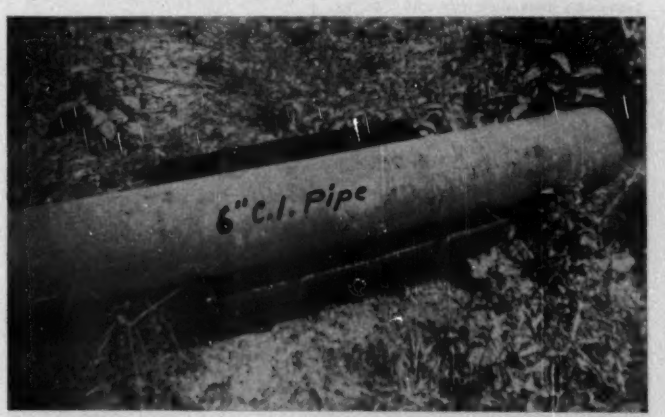
We have about six old hydrants that leak intermittently, and since replacement parts are unobtainable, we are planning to replace these hydrants by the use of the dry-ice-gasoline method. This method has already saved us many dollars in time and materials, as well as making it unnecessary in numerous cases to cut paved streets to get to corporation stops.

When freezing the 6-inch pipe, we feel the ice plug would have formed more quickly if we had not tested for flow so soon, but had waited for 1¾ hours before the first test. The small flow obtained on the early tests undid part of the freezing.

In all of our freezing jobs so far, no flow has existed in the pipe being frozen. Mr. Ford states that freezing cannot be accomplished if there is a flow of more than ½ pint per minute.

For our smaller jobs, we have secured dry ice from the local dairies. For the larger-main jobs we obtained the dry ice from a chemical-supply firm in Charlotte, N. C., which had the material delivered to us by motor freight at a time specified by us. The names of such supply houses can be obtained from local dairies.

We estimate that about 2 pounds of dry ice and 1 quart of gasoline will freeze the average 2-inch line. At the present time the expense of the materials would be about 25 cents for the 2-inch main. This cost weighed against the cost of cutting paved or unpaved streets, and the elimination of inconvenience to traffic, certainly seems to justify using this method. For the 6-inch main on which we experimented, we used 62 pounds of dry ice and 4½ quarts of gasoline, at a total cost of $6.50.



An oil can, 22 inches long and 14 inches in diameter, is cut in half lengthwise with openings cut in each end. A 6-inch cast iron pipe rests in the openings. Dry ice and gasoline are placed in the can and around the pipe to cover it. Wet clay, used at each end, closes any openings where pipe rests on can.

Colorado Springs Promotes Military-Civilian "Operation Cooperation"

THROUGH "Operation Cooperation," the police department of Colorado Springs and personnel of the extensive military installations in its area keep operative the motto, "No problem more than a week old."

"Operation Cooperation" is the creation of I. B. "Dad" Bruce, one of the nation's more prominent police chiefs, and is made effective through discussion groups at weekly luncheon meetings.

Chief Bruce is host at these Wednesday affairs and the city picks up the check as a part of its public-relations program.

For active meetings, Chief Bruce keeps the guest list to not more than 12 persons. Any military representative who has a new problem, or wishes additional clarification of some previously discussed matter, is urged to reserve a place on the guest list.

Other military personnel and police personnel; representatives of the FBI, or Colorado Highway Patrol or the El Paso County sheriff's staff, whose interests relate to immediate or future problems are invited by the Chief.

Some of the knotty problems dealt with include disposition of criminal offenses or violations of city and state laws by military personnel; the proper approach of police personnel to the peculiar problems and necessities of the military, and the entire field of good military-civilian relations.

Detailed records of every soldier or airman involvement with police are forwarded to the proper military authority. If that authority feels the involved person or persons entitled to special pleadings, that authority can "go to bat" with all the evidence at hand. In practice this has shown that the military does not defend its personnel without good reason, and so the system is strengthened.

Out of discussions at these meetings, Chief Bruce gets landmarks to guide his department's educational program, which is operative in the military establishments.

Fred Bachmann, head of the city's traffic bureau, has recently concluded a speaking tour of the establishments. To thousands of military personnel, assembled through the cooperation of their commanding officers, he has explained city and state traffic codes, and given correct information on such often nebulous matters as the state's insurance requirements and licensing regulations.

The military establishments, in turn, frequently give Chief Bruce assistance with traffic control and, now and then, in investigation work. A common sight in Colorado Springs are the smartly uniformed air police and military police directing traffic during parades or in the heavily congested areas near the bases.

City Manager Kenneth R. Card enthusiastically has given Chief Bruce a blank check to finance what he regards the least expensive but the most valuable of all the facets of the city's public-relations program.

Portland Wants Planners

THE City of Portland, Ore., invites applications from experienced planners for positions of Assistant Planning Director ($6,000 per year) and Planning Technicians ($4,500 per year).

Send applications before September 11, 1951, to Civil Service Board, Room D, Municipal Auditorium, Portland, Ore.

Sample of cooperation—to give Colorado Springs' short-handed police chief a hand in heavy traffic, Corporal Charles Bickley directs traffic in front of Air Defense Command headquarters, where congestion is a daily problem.

New Chief of Pennsylvania Bureau of Municipal Affairs

DR. WILLARD R. HANCOCK has been appointed Chief of the Bureau of Municipal Affairs of Pennsylvania, according to an announcement in July by William S. Livengood, Jr., Secretary of Internal Affairs. Dr. Hancock replaces Dr. Harold F. Alderfer, who resigned to organize a system of local government for Greece, where he is now engaged in that work.

Dr. Hancock comes from the Political Science Department of the University of Pennsylvania, with which he had been connected since 1946. In recent months Dr. Hancock has made numerous addresses before local government associations. He is an ardent champion of Home Rule.

St. Cloud Reports on Its War Against Vulgar Books

A FEATURE of the annual convention of the League of Minnesota Municipalities, held in Rochester, Minn., June 14-16, was a report by Mayor M. J. Malisheski of St. Cloud on the origin and operation of St. Cloud's Literature Control Ordinance.

The movement — directed first against comic books detrimental to youth — was started some two years ago in the local parent-teacher associations, backed by a young and aggressive Baptist minister, Raymond Anderson. At their urgent request, St. Cloud's mayor appointed a committee of representative community leaders. A sub-committee screened about 400 books from local newsstands, nearly 40% of which were considered to be unfit reading for youth.

While some of the dealers expressed their willingness to cooperate, it was decided that city-wide action could not be secured without a local ordinance. Such an

ordinance (No. 245) was enacted on March 22, 1950. It provided for the setting up of a Review Board consisting of five members to be appointed by the Mayor. Penalties up to $100 for the sale or display of condemned literature were provided, but Mayor Malisheski reports that through the cooperation of dealers and distributors, no invoking of penalties has yet been necessary.

This campaign against objectionable comic books has been extended to pocket-size books and pulp magazines purveying filth and horror.

Mayor Malisheski concluded his convention paper by urging other cities to cooperate in this movement, and by pointing out that:

It is important to remember, in working along this line, that the freedom of the press to report the news should never be interfered with. A significant phase of our progress is that there has been no infringement on the liberties and rights of our people. We feel these restraints we have put into effect are necessary for the preservation of freedom.

Negro City Employees Increasing in South

SIXTEEN major Southern cities now employ a total of 6,487 Negro municipal workers, ranging in job classification from service and unskilled occupations to managerial and professional positions, according to a survey report made public in July by the Southern Regional Council.

Although revealing that more than 110 different job classifications above the unskilled level are held by Negroes in the South, the report noted that no city yet had opened up as many as one-third of these classifications to qualified Negroes despite the high percentage of Negroes in the region's population.

Negroes, the report showed, are employed by municipalities in such clerical capacities as mimeograph operator, clerk-stenographer, and cashier; service occupations such as firemen, policemen, bailiff, and dogcatcher; semi-skilled occupations such as foreman, painter, and bricklayer, and such professional posts as social worker, nurse, and municipal judge.

Harold O. DeWitt, industrial secretary of the Richmond Urban League, prepared the report for the Southern Regional Council, an interracial group composed of leaders of both races from 13 Southern states.

Mr. DeWitt stated, "The history of employment of Negroes in the jobs listed in this report has been very satisfactory and in most cases the type of Negro applicant available is superior to applicants employed previously. Also, they are available in greater numbers."

The survey covered the cities of Atlanta, Birmingham, Dallas, Fort Worth, Houston, Jacksonville, Knoxville, Little Rock, Louisville, Miami, Nashville, New Orleans, Norfolk, Oklahoma City, Richmond, and San Antonio.

It was disclosed that these 16 cities had a total of 5,590 service and unskilled workers, 468 managerial and professional employees, 71 semi-professional employees, 269 semi-skilled workers, 43 skilled workers, and 46 clerical employes.

"More Beautiful America" Prize Winners

THE CURRENT (August) issue of *Better Homes and Gardens* announces the winners in the "More Beautiful America" competition conducted by that magazine.

The grand sweepstakes award and the first place for cities with over 100,000 inhabitants was won by the City Beautification Association of Corpus Christi, Texas. First place for cities of 10,000 to 100,000 went to the Junior Garden Clubs of Little Rock, Ark.; and for communities under 10,000, first place went to the Missionary Society of the Saratoga Christian Church, Saratoga, N. C.

Other winners were:

Cities over 100,000
- Four Square Boys Club, St. Petersburg, Fla.
- San Antonio Garden Center, San Antonio, Texas.
- North Baltimore Kiwanis Club, North Baltimore, Md.
- Lake Merritt Breakfast Club, Oakland, Calif.

Cities of 10,000 *to* 100,000
- Iowa City Woman's Club, Iowa City, Iowa.
- Fairlawn Memorial Park Civic Association, Fairlawn, N. J.
- Trout Brook Beautification Committee, West Hartford, Conn.
- Wakefield Garden Club, Wakefield, Mass.

Communities under 10,000
- Kirkwood Community Club, Guthrie, Ky.
- Vienna Recreation Association, Vienna, Va.
- Guymon Council of Garden Clubs, Guymon, Okla.
- Tombstone Business and Professional Women's Club, Tombstone, Ariz.

How Garden City, N. Y., Cares for Its Trees

GARDEN CITY, N. Y., has, and must maintain, roughly three-fourths of a tree per person. The town has a population of 14,500, and 9,500 street trees (between the curb and property line), in addition to those in village parks and parking areas. This, of course, does not include the many trees that are on private property.

To care for these trees means more than an occasional pruning or removal of dead wood, states Allan Rogers, Superintendent of Public Works. It means spraying, fertilizing, watering, removing low or dangerous branches, cabling and rodding, cavity work, replacement, correcting storm damage, cultivating new growth, and studying diseases which otherwise might cause extensive damage.

The Public Works Department is presently making a close study of the pine-root weevil, which has caused the loss of many pine trees. Garden City maintains its own nursery, furnishing the trees and shrubs for all planting on streets and other public properties, and maintains 20 parks covering 46 acres. Special attention has been given in recent months to replacement of many trees lost in the storm last November.

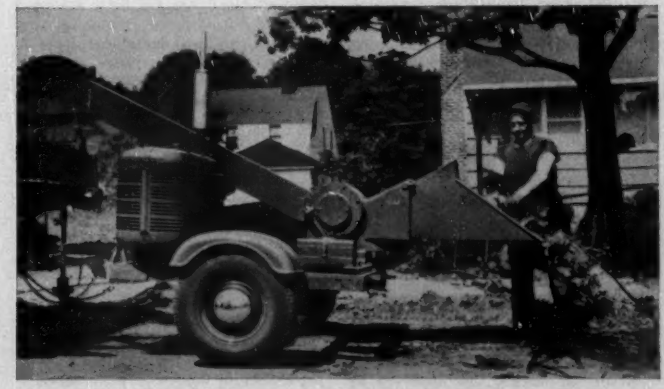
Tree maintenance operates under the Division of Parks, in the Department of Public Works. Frederick Van Orden is foreman. The Division has four tree surgeons, two equipment operators, one nurseryman, two parking-field maintainers, and 12 laborers.

Highway Study Fellowships Awarded by Yale

FIFTEEN graduate engineers from 12 states have been awarded fellowships and scholarships for study in Yale University's Bureau of Highway Traffic during the academic year 1951-52.

The Bureau, established at Yale in 1938, is a center of graduate training and fundamental research in highway matters. Each year it trains a group of 20 to 35 men for a professional career in highway operations and traffic engineering.

Nine of the fellowships are sponsored by the Automotive Safety Foundation, and two others are offered by the American Transit Association and the Rand McNally Company.



Disposal of bulky loads of brush is facilitated by this Asplundh brush chipper, which chops the branches into sizes that are easily hauled.

Street Design Principles in Los Angeles

Concrete bus-stop areas prevent undue and rapid deterioration at the gutter.

By PERRY S. HAGERMAN
Civil Engineer
Street and Parkway Division
Bureau of Engineering
Los Angeles, Calif.

THE Los Angeles street system, exclusive of freeways, consists of approximately 215 miles of state highways, 1,058 miles of major streets, and 3,788 miles of local streets. The 215 miles of state highways are primarily the responsibility of the State Division of Highways, their improvement and maintenance being financed from state gasoline-tax funds. The city has frequently done the preliminary surveying and prepared the construction plans as agents for the state.

The California gas-tax law provides that 5/8 of a cent of tax on each gallon of gasoline shall be made available to cities for improvements, including acquisition and maintenance of major streets. A street may be included in this list, upon application, regardless of its condition at the time if, in the opinion of the State Director of Public Works, it will be of sufficient importance in the over-all traffic pattern to warrant the use of the gas-tax funds allocated to the cities.

New Street Program

In the four fiscal years since the end of the war, 516 miles of streets in the City of Los Angeles have been improved at a cost of $28,700,000. A large proporton of this mileage consists of new streets improved and dedicated incident to the subdivision of land. Improvement plans for streets within subdivisions are usually prepared by private civil engineers. The plans must, however, be checked and approved by the city engineer before construction may start. This construction must then conform to city design standards and specifications for materials and workmanship.

The 453 square miles within the city include every type of terrain from the rugged Santa Monica Mountains to flat alluvial plains. Many large tracts were subdivided before the city had authority to control street alignments and grades. Some of these were established with apparent disregard for the contours of the land and were not improved. In the later improvement of these streets it has not been practical to establish definite standards for grades or radius of curvature. Some of these local streets have been improved with grades exceeding 30% and radii of curvature under 50 feet. Streets have also been constructed with grades of less than one inch per 100 feet.

Present standards for dedication require grades not over 8% and radius of curvature of at least 500 feet for through streets. The maximum grade for local streets is 15%, and the minimum radius of curvature is 75 feet. No absolute minimum grades are specified.

Ten feet is now the accepted minimum lane width. However, lane widths of 11 or 12 feet are considered desirable where there is an unusually high percentage of trucks or where greater speeds are permissible. Lane widths in excess of 10 feet are found to have a tendency to invite excessive speeds for congested districts. The use of 11-foot widths for the center or opposing lanes on multi-lane streets appears to have a distinct advantage in intermediate districts.

For many years it has been customary to provide a 7- or 8-foot parking lane adjacent to the curb. Such a width has been found unsatisfactory for two reasons: (1) During practically all of the maneuvering movement of parking, the adjacent lane will be blocked; and (2) This width cannot be satisfactorily used for moving traffic in rush hours when parking is often prohibited along traffic streets.

Accordingly, we are now providing a full 10-foot lane of portland-cement concrete adjacent to each curb on arterial and secondary streets.

A dedicated width of 100 feet is most common for arterial streets. This can be advantageously developed with eight 10-foot lanes and 10-foot sidewalk areas in business districts or where property access is an important factor. In areas where access is a minor factor, this width is sometimes developed by providing a median strip and three 12-foot lanes in each direction.

Most existing secondary streets are dedicated 80 feet in width, and are now being developed with 60-foot roadways. On new major and secondary streets the present practice is to acquire 4 additional feet of dedication to permit increasing the central lanes and side areas to 11 feet.

We are using concrete at the curbs of the busier streets because it has been

found that on asphalt-type pavements, excessive maintenance is usually required just outside the gutters because of the combined action of softening of pavement from drippings from parked cars and the breaking and accelerating horizontal forces.

Most local streets occurring in the regular grid type of subdivision are dedicated to 60 feet in width and are improved with a 36-foot roadway. In many of the newer areas, collector and secondary streets are provided at regular intervals, and the purely local streets are looped or terminated in turning circles. These streets are then made narrower to a minimum of 34-foot dedication and 26-foot roadway width. Where such streets terminate in a turning circle, it is desirable that this circle be large enough to permit constructing the pavement to a 35-foot radius, with a 25-foot radius the absolute minimum. Otherwise, refuse-collecting equipment may be unable to turn.

Street Intersections

It is customary to use a 20-foot radius for curb returns at standard intersections, with larger radii where warranted because of trucking or bus movements. Either integral or separate curb and gutter are used, with the latter preferred where it is obvious that many future curb cuts will be required for driveway construction. All curbs are designed with a batter of only 1¼ inches to the foot, as it is felt that a nearly vertical curb provides more protection for pedestrians as well as facilitating improvements in the parkway area. Although this is a semi-arid location, there are frequent periods with a high intensity of rainfall and, therefore, high run-off. This frequently requires a curb height of 8 inches or more to obtain sufficient water-carrying capacity.

Conditions are seldom encountered where the cost of curb underdrains is warranted, and they are, accordingly, virtually non-existent here. However, where soil conditions indicate the necessity for imported sub-base material under pavement, it is constructed to a point 1 foot back of the curb.

Soil Tests

Soil tests and analysis are made for all paving projects. Pavement and sub-base thickness is designed so that the street should require a minimum of maintenance for 20 years with the projected traffic. Occasionally, a satisfactory pavement even for a heavy-traffic street is obtained with 6 to 8 inches of asphalt-concrete or cement-concrete pavement on a compacted subgrade of the native soil. Where this is not satisfactory, it is customary to use a sub-base of compacted selected materials 4 to 20 inches thick rather than to increase the pavement thickness. For purely local residential streets, a hot plant-mixed surface, made with SC-6 road oil with a thickness of 3 to 4 inches, with or without imported sub-base material, is usually sufficient.

In addition to the regular paving jobs, there are many angular and multiple intersections constantly requiring study with a view to channeling or otherwise controlling traffic flow.

Trolley-Coach Problems

The substitution of trolley-coach or bus service for over 100 miles of street-railway service has posed many design problems. A large proportion of the tracks was within paved-street areas, and these tracks have been abandoned in place. Many of these streets had deep gutters of brick or cobblestone. In some cases new concrete gutters can be constructed to a reduced curb height, some of the old surfacing burned off, and a new surfacing placed from gutter to gutter, topping the rails with 1½ to 2 inches of asphalt-concrete surface. The cost of this work is less than removing the tracks and repaving track area only. There are some cases where this method of rail topping was used 20 years ago and the street is in good condition today.

At many locations the stopping and starting of buses so rapidly corrugated the asphalt-concrete surfacing that it has been found more economical to construct concrete bus-stop areas than to replace the surface at such short intervals. To date, approximately 200 of these bus-stop areas have been constructed. These are being constructed with a minimum length of 90 feet, a width of 12 feet, and an 8- to 10-inch thickness.

The Bureau of Engineering is constantly studying the matter of improved design and construction of new streets, and the improvement of many miles of existing streets, some of which were laid out and constructed before the era of the modern motor car. It is cooperating in the location and design of many miles of freeways, designed to provide for non-stop, safer, and more speedy flow of through traffic traversing the longer distances involved in crosstown trips.

Old, lifeless asphalt can be loosened with the surface heater shown above and removed with a Galion grader that follows behind the heater. The burner is a product of the Asphalt Heating Company, of Burbank, Calif.

Another view showing the removal of deteriorated asphalt. A Galion roller compacts the freshly uncovered surface.

MPR Municipal Public Relations

The City Tells Its Story

By HENRY DAVIS NADIG

Executive Director, Government Public Relations Association

German MPR officer reports on visit to U. S.

LATE last year I had a visitor from Germany—Otto Haas, the Public Relations Officer for Munich. He was one of several German officials here under the Department of State's program for acquainting German leaders with our country. Mr. Haas has now reported some impressions of his visit that I'd like to pass along by way of this column. Some of you may have met Mr. Haas or one or more of the other foreign visitors interested in our various levels of government and, therefore, will be particularly interested in his comments. The importance of playing good host to foreign visitors cannot be overestimated—especially in our field of public relations. If even one of us benefits from reports by foreign visitors keenly interested in our government activities, such reports will have been worthwhile. Excerpts from Mr. Haas's comments follow:

Purpose and Background

American local government, especially *city administration, public relations, and public reporting*, are my special fields of interest according to my occupation as Public Relations Officer in Munich. Four months is a very short time for studying American government, because the regulations of city charters, city organizations, public relations, etc., are very different in each city. There are the general charter, the special charter, the alternative, and the home-rule charter system; the mayor-council, the city manager, and the commission plan. All this is quite different from the conditions in Germany where one charter—providing the mayor-council plan—is given to all cities by the state. Also public relations and public reporting are handled very differently in the American cities.

Of course, it took me a certain time to become acquainted with all these several kinds of American local government by book studies, etc. Very helpful in this respect was the really outstanding Library of Congress and likewise the Library of the Bureau of the Budget. Besides the mentioned studies, I got a general idea of the various problems—in Chicago from the American Municipal Association and the International City Managers Association, and in New York from the Association of Municipal Public Relations Officers, the National Municipal League, and others. Very well-advised by the gentlemen of the Bureau of the Budget, I started with this background for a seven-week-tour to visit several cities in many parts of the country to see the kinds of city administration in action. . . .

I found only in a few cities a public-relations director and I saw that the relations with radio, press, etc., are handled mostly by the mayor himself, the city manager, or their assistants. But independent from the manner in which these relations were handled, I saw everywhere very fine publications, especially annual reports. Visits in many newspaper offices gave me an idea of the relationship with the press seen from the other side.

To this theme I may be allowed to make a few remarks: Because the public has a right to get information from municipal governments, public relations is one of the most important phases of municipal government. Besides the city's own publications, the radio speeches of the mayor, the television broadcasts, etc., daily reporting in newspapers is one of the most successful ways to bring the problems of the adminstration nearer to the people. In smaller cities it may be sufficient that the necessary information to the press be given by the mayor, city manager, or their assistnts, but in the larger cities, I believe, the best way to handle public relations will be the creation of a special public-relations office with an independent and well-informed head. Above all, he should not come and go with new administrations. Newspapers welcome such offices because they save time and effort in getting the needed information from one office instead of asking in all different departments. Of course, this doesn't exclude the fact that in particular cases the reporters are received by the mayor or by the heads of departments. Good public relations is always a question of personality.

It was a pleasant surprise for me to find in New York the "Association of Municipal Public Relations Officers." From the executive director I got very good information and material about all problems concerning American local government. The general objective of this organization "to aid in combating civic inertia and strengthening municipal democracy by making governmental operation more understandable" is very promising and I am sure that great attention will be paid to my report about it in Germany.

Patriotism That Helps

THE helpful kind of patriotism is the kind that grows out of a knowledge of one's town, of her growth, her people, her property, her government, and her needs. This knowledge develops first an intelligent interest, then a sympathy, then a reasonable affection, a wise and temperate jealousy for her good name, a wish that she may prosper and grow more beautiful, and, finally, a desire to help her to become greater and finer, a bright and clean workshop, and a home for the best of men and women.

—JOHN COTTON DANA

How Will It Help the Largest Number of People—Most?

THE heading of this item is suggested as a motto which should be framed and on the wall of every city or village council chamber. The idea comes from C. S. Hunsinger, coordinator of the Rural-Urban Coordination Service, Flat Rock, Ohio. Mr. Hunsinger writes to THE AMERICAN CITY:

In order to get public projects accomplished it is usually necessary to dramalize them in some way to stir the public to favorable action. Why not include this feature at the start of a project instead of fighting an extended battle against powerful minority groups?

As a community coordinator, I have found it best to consider carefully the viewpoints of those who will naturally be opposed to a project and to give them an opportunity to present their side at the start of a campaign. This will help them to explode their anger—to get it out of their systems and thus reveal any selfish viewpoints to the public.

Then, after a reasonable cooling-off period, again bring the project to attention, with answers to the arguments and emphasizing the viewpoint: *"How will it help the largest number of people—most?"* * This viewpoint—and much depends upon viewpoints—builds an unselfish public spirit which is so essential for favorable action.

A simple, practical, and effective plan for communities to handle the most crucial projects is for the mayor to invite the heads of four leading groups—educational, religious, economic, and social—to meet informally to discuss the project. He will thus have a powerful coordinating council—a cooperation of real public spirit.

* A two-color copy of this motto card will be sent without obligation to any municipality wishing to consider displaying it, by writing to Mr. Hunsinger.

25 Get Scrolls for Outstanding Contributions to Government

HAROLD KELLER, New York State Commissioner of Commerce, presented scrolls on July 9 to the 25 winners of the first series of Public Service Awards of Merit, given by the *Civil Service Leader*, weekly newspaper for public officials and employees in New York State.

Jerry Finkelstein, publisher of the *Leader* and former chairman of the New York City Planning Commission, explained that the awards are to be given each year "as recognition of the outstanding contributions that private citizens are constantly making to the public service, and as a stimulus to other private citizens to join them in bettering their government."

The winners were:

Frank W. Abrams, Chairman of Board, Standard Oil Company of New Jersey
Frederick H. Allen, Harrison, Ballard and Allen
Dr. George Baehr, President and Medical Director, Health Insurance Plan of Greater New York
C. R. Beardsley, Head, Research Division (retired), Consolidated Edison Company of New York
Milton M. Bergerman, President, Citizens Union
Henry Bruere, Chairman of Board, Bowery Savings Bank
Harold S. Buttenheim, Editor, THE AMERICAN CITY
Robert K. Christenberry, President, Broadway Association
Howard S. Cullman, Chairman, Port Authority of New York
Robert W. Dowling, Chairman, Citizens Budget Commission
William Dean Embree, Chairman, Civil Service Reform Association
Marion B. Folsom, Treasurer, Eastman Kodak Company; Chairman, CED
Bernard F. Gimbel, Chairman of Board, Gimbel Brothers, Inc.
Neal F. Harmon, Civil Defense Planning Coordinator, Electronics Department, General Electric Company
Philip S. Harris, President, S. Klein
Walter Hoving, President, The Hoving Corporation
Mrs. David M. Levy, President, Citizens Committee on Children of New York City
Alexander M. Lewyt, President, The Lewyt Corporation
Michael J. Merkin, President, M. J. Merkin Paint Company, Inc.
Mrs. Walter Neale, Past President, League of Women Voters
Ira S. Robbins, Executive Vice President, Citizens' Housing and Planning Council of New York
Dr. William J. Ronan, Director, Graduate Division of Public Service, N. Y. U.
Maurice Rosenfeld, President, Equitable Paper Bag Company, Inc.
Gen. David Sarnoff, Chairman of Board, Radio Corporation of America
Joel W. Schenker, President, Gregory-Roth-Schenker, Inc.

In presenting the awards, Commissioner Keller said in part:

No one can hold a position of responsibility in our state government without realizing the important contribution made to the welfare of the people of the state by men and women in all walks of life who, as private citizens, give unselfishly of their time and energy to help cope with some of the crying needs of the times. I have seen men and women of business, of the professions, of agriculture, of labor; housewives, and many who have earned retirement from active life, work in common cause with public officials in applying their wisdom and their experience for the betterment of their fellow man. I have seen men and yomen, immensely busy in their own affairs, devote months and years of their valuable time to finding the right solution to some of the most challenging social, economic, and political questions. No government—federal, state, or local—could pay what these services are worth. Yet no government could do without them. You who are receiving these awards of merit today are indeed public servants extraordinary . . .

Show me a prosperous, progressive community, and I will show you that its local government has the benefit of the advice and close-working cooperation of its business and professional leaders. I wish that were more universally true. There is still a great need for better cooperation between business and government. The permanence of our present free system on a wholesome basis demands it. Cooperation must be based on understanding. Understanding, in turn, comes only from the will to recognize each other's problems and appreciate each other's needs and accomplishments.

WATCH YOUR AIM

Corruption in government makes most people boiling mad, and there certainly has been plenty in recent months to get mad about—buyable cops and crooked sheriffs and mysteriously well-off figures connected with the federal government.

It is of course proper to get sore at crime and graft, but aim your anger at the right targets. If some city or county or federal employe is dishonorable, he ought to be dishonored. But let us not dishonor ALL government people for the sins of the very few, unless we are ready to dishonor government itself—which is us.

REPRINTED BY PERMISSION FROM THE JUNE 1951 ISSUE OF "CHANGING TIMES," THE KIPLINGER MAGAZINE, WASHINGTON 6, D. C.

Kilowatts Marked Down 35 per cent

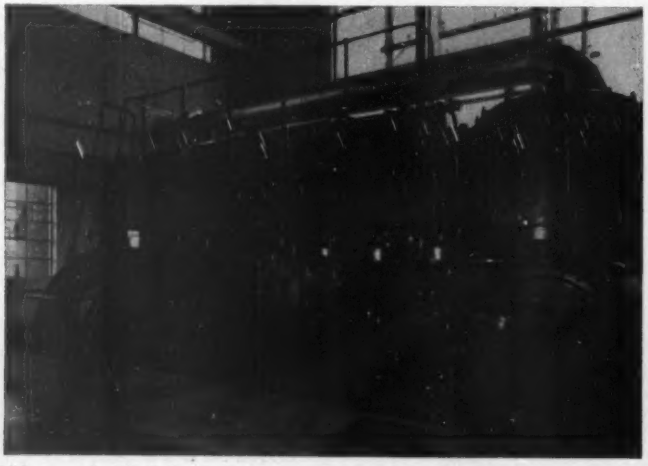
By JOHN C. HERTER
Superintendent of Utilities
Lindsborg, Kans.

Lindsborg, Kans., installs a gas-diesel engine in its plant and cuts the fuel bills from 7.2 to 4.7 mills

The plant building reflects how electric service has grown in Lindsborg.

IN JULY 1949, Lindsborg, Kans., paid 7.2 mills in fuel bills for every kilowatt-hour generated in its municipal power plant. Just four months later, the average fuel bill was down to 4.7 mills, or 65% of the former cost. The main generating unit produced a kilowatt-hour for a fuel cost of 3.8 mills.

This advance demonstrates a development in plant operation; in fact, the entire Lindsborg plant reflects this development. On one side is an old brick structure which has housed power equipment for nearly half a century. On the opposite side is a modern power house. Inside, at the old end of the building, is the city's first diesel, a 150-hp Fairbanks-Morse engine installed in 1925, now scheduled for removal. Next comes a 360-hp F-M diesel installed in 1929, then the 450-hp F-M diesel put into service in 1936. Then there is a 700-hp F-M diesel—a heavy-duty, pump scavenging, two-cycle engine with full pressure lubrication and oil-cooled pistons, installed in 1947. Finally, in the new building is the new unit, put into operation in July 1949. It is a six-cylinder F-M, developing 1,200 hp at 300 rpm, designed for dual-fuel.



The new dual-fuel diesel. Its average fuel cost has been 3.8 mills per kw-hr.

For a short time, pending arrival and installation of the dual-fuel parts, the big engine ran on diesel fuel. Then, in the latter part of November 1949, the unit was switched to natural gas with oil as a pilot fuel. Under this operation, it produced less vibration, used less oil, and will be cheaper to run.

First Half of 1949

In the first seven months of 1949, before the new engine went into service, the plant generated 1,651,700 kw-hrs. while consuming 145,630 gallons of fuel oil—an average of 11.34 kw-hrs. per gallon. The cost of fuel per kw-hr. averaged 7.2 mills. In the next four months, with the new engine in operation as a full diesel, plant production was 1,014,700 kw-hrs. on 81,530 gallons of oil and 20,779,000,000 cubic feet of gas. Average fuel cost for the plant was 4.7 mills per kw-hr. In that period, the dual-fuel unit generated 1,497,500 kw-hrs. at an average fuel cost of 3.8 mills per kw-hr.

In the period of dual-fuel operation cited, the new engine generated more than 70% of the total plant output. During the eight months, the unit ran 3,421 hours, an average of more than 14 hours a day. The operating load factor was little better than 50%, which means that the engine was well below its peak efficiency.

While fuel savings are the largest single factor in dual-fuel economy, there are other advantages worthy of note. Lubricating oil economy for the big engine was already good with an average of 4,888 hp-hrs. per gallon of lube consumed before the switch to gas. In eight months as a dual-fuel, the engine consumed 763 gallons of lube for an average of 5,380 hp-hrs. per gallon.

The plant has the benefit of experienced operating personnel. Chief Engineer Ralph Robinson and two of his operators have a combined service record of 98 years. Mr. Robinson has worked in the plant for 38, Carl Lander for 32, and L. W. Polson for 28. Operations of the Light and Water Department are under the direction of Superintendent of Utilities John C. Herter. Matters of policy are determined by Mayor C. W. Beckstrom and the eight-man City Council.

Civil Defense Research Associates To Provide New Municipal Aids

THE Civil Defense Research Associates, formerly the Civilian Protection Group, was formally incorporated on June 26 as "the national forum and clearing house for civilian and industrial protection." The organization affords local civil-defense directors an opportunity to join in the country's first unofficial national professional organization in the fields of civil defense and plant protection. It is non-profit and non-political, and will serve as the central focusing point for those persons seriously concerned with the unofficial exchange of ideas, data, problems, etc.

Membership application forms may be obtained from the headquarters of the organization at Room 501, 475 Fifth Ave., New York 17, N. Y. Individual membership dues are $10 per year. The CDRA provides a comprehensive library and reference files for data of all types relating to the implications and effects of modern warfare as they may affect civilians and industry, and the causes and effects of catastrophes and disasters.

The group will hold an annual conference devoted to civil defense. In addition, quarterly forums will be held in New York City, with technical discussions on a monthly or bi-monthly basis, and round tables for periodic conferences of experts for consideration of special problems. A regular publication will be issued, and the CDRA is also currently engaged on two special research projects for the Federal Civil Defense Administration.

Plans are under consideration to establish regional chapters in the Chicago, Ohio, and Colorado areas. Interest has also been expressed in the possibilities of a West Coast chapter.

Officers are:

President: S. A. Anthony, Jr.; Vice-presidents: Atlantic Region, Arthur H. Crowl; Central States Region, Col. William E. Warner; Great Lakes Region, Chief Anthony Mullaney; Mountain States, Thomas W. Perry; Treasurer: Virginia Keyser, Richardson Wood Company, N. Y. C.; Secretary, Max Spitalny, N. Y. C., and Counsel: Milton Winn, N. Y. C. Dr. L. C. Longarzo is vice-president of the Legal Section.

Chairman of the Board of Directors is Dr. Walter L. Cronin, Director of Civil Defense, Cambridge, Mass. In addition to the officers named, directors include R. Maxil Ballinger, National Industrial Conference Board; William H. Byrne, N. Y. C.; Eric Carlson, Associate Editor of THE AMERICAN CITY; John B. Davenport; Maurice duPont Lee, Director of Civil Defense, Wilmington, Del.; Ross L. Leffler, Director of Civil Defense, Pittsburgh; Dan A. Sullivan, Chicago Civil Defense organization; Col. Edward B. Towns, New York; H. H. Vreeland, Jr., Director of Civil Defense, New Haven, Conn., and L. W. Widdecombe, Staten Island, N. Y.

Jasper, Ala., Holds Open House

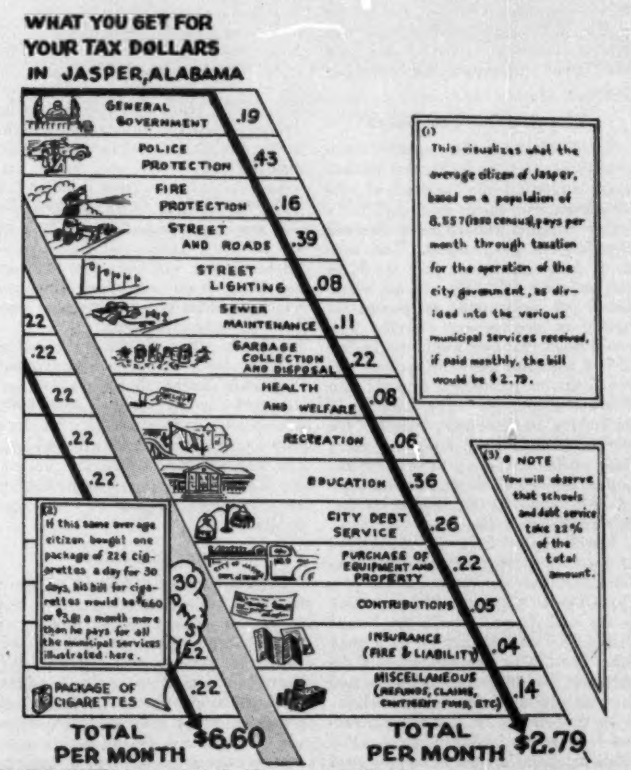
THE FIRST ANNUAL Open House recently held in Jasper, Ala., (1950 population, 8,557) capitalized on the public-relations possibilities of such an event.

At an opening parade, local civic and fraternal organizations presented the city with the national and state flags in an impressive ceremony. Distinguished guests included the Governor of the State, members of Congress and the State Legislature, representatives from the Alabama League of Municipalities, and mayors and members of commissions from the surrounding area. The ceremony was tape-recorded by the local radio station.

After the ceremony, City Manager R. Powell Black conducted all the guests through the City Hall, explaining the functions of each department. Following the tour, the guests adjourned to Jasper's $250,000 Memorial Park for a buffet luncheon, donated by local business organizations.

Each guest received an attractive program folder of the occasion and a copy of a tax leaflet prepared by the city manager and reproduced on this page.

AT THE first meeting of the newly elected Council of the Town Planning Institute of Great Britain, E. H. Ford, O.B.E., M.T.P.I., M.I.C.E., of Coventry, was elected President for 1951-52 He will take office in November, on the expiration of the term of office of Lieut.-Col. H. P. Cart de Lafontaine, O.B.E.


WHAT YOU GET FOR YOUR TAX DOLLARS IN JASPER, ALABAMA
GENERAL GOVERNMENT .19
POLICE PROTECTION .43
FIRE PROTECTION .16
STREET AND ROADS .39
STREET LIGHTING .08
SEWER MAINTENANCE .11
GARBAGE COLLECTION AND DISPOSAL .22
HEALTH AND WELFARE .08
RECREATION .06
EDUCATION .36
CITY DEBT SERVICE .26
PURCHASE OF EQUIPMENT AND PROPERTY .22
CONTRIBUTIONS .05
INSURANCE (FIRE & LIABILITY) .04
MISCELLANEOUS (REFUNDS, CLAIMS, COURTESY FINES, ETC) .14
PACKAGE OF CIGARETTES .22
TOTAL PER MONTH $6.60
TOTAL PER MONTH $2.79
(1) This visualizes what the average citizen of Jasper, based on a population of 8,557 (1950 census), pays per month through taxation for the operation of the city government, as divided into the various municipal services received. If paid monthly, the bill would be $2.79.
(2) If this same over age citizen bought one package of 22¢ cigarettes a day for 30 days, his bill for cigarettes would be $6.60 or $3.81 a month more than he pays for all the municipal services illustrated here.
(3) NOTE You will observe that schools and debt service take 22% of the total amount.

THE TOTAL AMOUNT in taxes spent by the city of Jasper for each Jasper citizen is illustrated in the drawing above and compared on a monthly basis to the amount an average smoker spends for cigarettes. As brought out by the drawing, a total of $2.79 is spent by the city for each person to provide police and fire protection, to maintain schools, streets and roads, and to finance the numerous other services furnished by the city government. The left hand column represents the purchase on one package of cigarettes per day at 22 cents, a lower price than is charged by most merchants, for a total of $6.60 spent by a one-package-per-day smoker in a 30-day month. A comparison of the two total expenditures portrays strikingly the comparative low cost per person for all services provided by the city government. (Engle studio)

Purchasing in Baltimore

The importance of good purchasing relations with the public and with your "using" departments

CRONHARDT & SONS

By J. HERBERT GASTON
City Purchasing Agent
Baltimore, Md.

THE AMERICAN CITY MAGAZINE enjoys a circulation of approximately 22,500 and its monthly issues can be seen in virtually every office that concerns itself with the administration of local public affairs and services.

It covers, by advertisement or written articles, all the various ramifications of the great and complex system which keeps the wheels running in well-organized cities with populations running all the way from the multi-million class of New York, Chicago, Philadelphia, Los Angeles and Detroit, and others in the near million group, down to the nation's small cities, townships, and counties. It also covers state public offices and many privately owned institutions.

In this wide coverage, there is one thing (regardless of the size of the public office) that is common to all, and that is that these structures are built for but one purpose—service to the taxpayer.

The Smaller Purchaser

In reaching into these smaller counties, cities, and towns, it must be that many copies fall into the hands of public officers who, among other duties, are either charged with or have accepted the duty of procurement. This may mean that, even though they are doing this exacting job, they are not established or recognized as purchasing agents or procurement officers. This could mean that they would not be furnished with full authority, proper surroundings, or personnel. It could also follow that necessary experience would be lacking and also that, were the job worked in with other duties, necessary time would be lacking to see that the dollars they spend would be spent wisely. It is to officials in this category that this article is directed.

I will depart from the usual type of purchasing-department statistical information and say only that we purchase for the City of Baltimore, which is the sixth largest city in the United States, and we feel that we do a good job. The writer has headed this department for 20 years, and has come through with a minimum of criticism.

My first thought is that the job cannot be done well without good public relations. This does not mean only good relationship with the general public. This, of course, is necessary, but it has to be coupled with good relationships with those of your own department—and spread from there to all departments, bureaus, and/or commissions and/or other subdivisions of your local government.

Become well acquainted with the people who are going to use the materials you purchase but, better still, know the need for and the subsequent use of these materials. Cooperate with the using departments, and you will find that they will cooperate with you.

Be firm but fair with all houses with which you do business and always keep in mind that you are spending public funds. It, therefore, follows that open competitive measures must be recognized and that the low bidder must be given consideration. It does not, however, mean that you have to accept inferior merchandise because of this low price, since part of your responsibility is to know how to specify or describe the items on which you require prices. It is of the greatest importance to be able to analyze the various samples submitted against their prices. Good public relations will enable you to get unbiased opinions from those to whom you go for information. With this information you can make a fair decision and the receiving department, having confidence in you, will know that the deal has been closed only after all points which may have been in discussion have been honestly considered.

All men entrusted with the spending of public funds should have some sound legislation behind them—charters, ordinances, or directives — and these should be strictly complied with. You may find that these laws will build up red tape which will slow the process, but they are there for your protection as well as for the protection of the taxpayers.

Sound Precepts

If you have not yet found out, you will soon learn that many would like to do your buying job and then have you rubber stamp the order. But if and when the pinch comes, you will find them hedging. Here again is where good public relations come in and, if you have done a good job, these cases will be minimized. Do not expect, however, to stop all of this type of buying, as real emergencies will arise and break down any well-formed system. Do not let so-called emergencies break up your planned system; this is where you get paid back for having familiarized yourself with the workings of your using departments. With this knowledge you are in a better position to analyze departmental needs. Hold all the emergencies to a minimum and set up a schedule that can be maintained.

Determine which items should be under contract and place them there, thus eliminating a lot of repeat work.

Rules to Keep in Mind

If your purchasing function is part time and you have other non-related duties, do not second-rate your buying job. It is an important part of your administration set-up, and can become very costly if not properly handled.

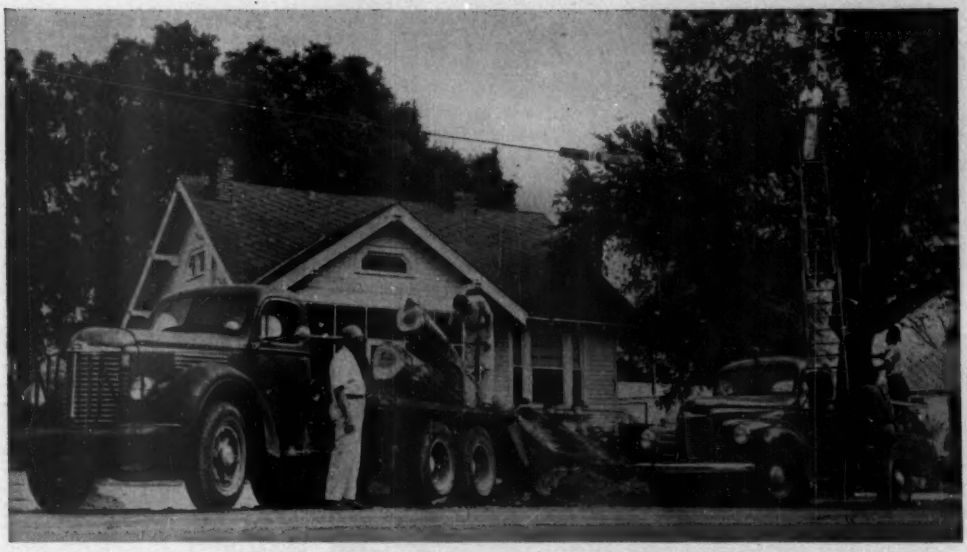
Another good rule to keep in mind is to do your buying while you are in your office. The golf links, cocktail lounges, or social gatherings are a very poor substitute for your desk, your files and records, and your clear mind.

Stick to the competitive system and, when quotations are given, remember that they are given in trust and should not be revealed for the benefit of others. This naturally only means those bids which are not sealed and are offered in an informal way. Those that are sealed and subject to public reading are secure and cannot be changed.

In summation, I would say:

1. Buying (public or private) is an exacting function.
2. The privilege of spending public funds is a sacred trust and its importance should not be minimized.
3. Be fair and firm in your decisions.
4. Create good public relations with all those you have to contact.
5. Remember that you too have a temperament and that you can be wrong.

Tree Care is Continuous in Mobile



Two International trucks, one with a Gar Wood power winch and a special loading lip, and the other with an American Coach & Body Company extension ladder, aid in the care of Mobile's beautiful shade trees.

Two specially equipped trucks and a trained crew constantly improve city's extensive stand of shade trees

By HARRY L. FISHER
City Engineer
Mobile, Ala.

MOBILE probably has more trees of almost every description per square mile than almost any other city, and these trees confront us with a program of continuous maintenance.

Program

We have many streets that have large live oaks planted between the curb and the sidewalk. The limbs of the trees meet in the center of the street to form a living arch. Some of these live oaks have a 135-foot spread. Mobile is proud of her trees and is endeavoring to do something that will prolong their life and, at the same time, keep them from being a hazard to traffic.

With this idea in mind, we established a program to be carried out by the Street Department, under the operational direction of Lester H. Meyers, Superintendent of Streets and Refuse Disposal. There is one foreman in charge of a crew of trimmers consisting of three men, and another crew which is made up of three to eight men who remove stumps, large limbs, and cuttings.

Operation

The tree-trimmers operate from a truck equipped with an American Coach and Body extension ladder, and they do all of the minor trimming on the trees, removing all dead limbs and trimming the trees so that the limbs do not interfere with traffic. This truck has proved to be of invaluable service and can be moved from place to place rapidly. Virtually all parts of a tree can be serviced from this extension ladder. The ladder has an extension ranging from 12 to 23 feet.

All large stumps and trees are loaded on a large flat truck which is equipped with a Gar Wood winch and a fan-tail extension on the rear end of the truck body. So far, we have been able to remove any size stump or portion of a tree without resorting to other equipment. It does become necessary, at times, to secure a police escort to get the truck and its load through areas where traffic is rather congested.

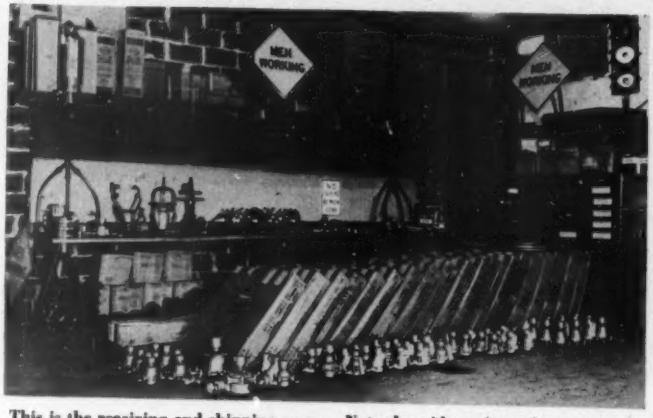
Fine Results

No one is allowed to trim or remove trees within the confines of the street without first securing the proper permit from the city. It is the purpose of the city to operate this program continuously. The pleasing effects of the work so far done are reflected by the expressions of appreciation by the people of Mobile.

Water-Meter Repair Shop

For 700 Small Towns

Service and repair shop for water departments of 700 southern communities.



This is the receiving and shipping room. Note the wide variety of water-supply equipment that is ready for shipment to the company's customers.

Repair and testing of water meters is one of the most popular services. Meters are tested and assembled here. Repaired meters are guaranteed for a year.

BIG-TIME service for the small Southeastern community is the aim and function of Cities Supply Company, Inc., of Sumter, S. C. This organization came into being through the work of M. B. Randle, who realized that many small towns were left to operate substantial water-works projects without personnel capable of performing all of the various tasks required.

Municipalities in Five States Use the Service

Ten years ago, he opened his present firm and started warehousing and keeping records of what these towns need. Communities using his service cover parts of Virginia, North and South Carolina, Georgia, and Florida. Many of these communities are so small the salesmen from the major manufacturers never call on them.

One of the most popular services is that of repairing and testing meters. This makes it possible for small communities using meters to have a reliable meter-repair program without going to the expense of a meter-repair and test bench; it also relieves them from having to maintain a large stock of parts. At present, the firm has about 700 municipalities as customers taking advantage of this service. Mr. Randle states that he has parts for every known make of water meter in use.

Water-Works and Specialty Manufacturers Represented

The company represents 11 different water-works suppliers in this area. These include: Worthington-Gamon Meter Company, Ford Meter Box Company, Hays Manufacturing Company, Revere Copper and Brass, Inc., Mueller Brass Company, Dresser Manufacturing Company, M. B. Skinner Company, Ridge Tool Company, Reed Manufacturing Company, General Detroit Corporation, W. H. Stewart Company. Other specialty manufacturers are also represented by Cities Supply Company.

Beauty's Place in Modern Zoning

Niagara Falls' new regulations recognize the place of planning for beauty in a modern zoning ordinance

By ALBERT S. BARD
Counsel to the National Roadside Council
New York, N. Y.

THE City of Niagara Falls, N. Y., in its zoning ordinance adopted by the City Council March 5, 1951, has taken the bull by the horns and enacted some regulation of private property upon esthetic considerations pure and simple—if esthetic considerations, except of the narrowest sort, can ever indeed be pure and simple, divorced from other recognized considerations supporting the exercise of the police power.

In its main zoning regulations, Niagara Falls recognizes the direct relationship between planning for beauty, or esthetic effect, and such now non-controversial bases for planning as property values, tax results, the character, the social and economic stability of districts, and so forth. The ordinance expressly recites these established factors as among the considerations upon which the ordinance is based. But Niagara Falls goes further.

Scenic Protective Regulations

Section 8 contains "scenic protective regulations." Within an area designated as a "scenic protective area" no building may be constructed, reconstructed, or altered in exterior appearance, unless the plans have been approved by the city's planning board. Nor may any sign be maintained without like submission and approval. As an aid to the planning board in arriving at judgments, an advisory committee is constituted; and among the criteria to be applied by the planning board are the "design, appearance, and relation to one another" of proposed constructions, which are required "to enhance rather than impair the attractiveness of appearance of the environs of Niagara Falls and the gorge of the Niagara River." The same procedure applies to strips 100 feet wide plus street widths surrounding such parks of the city as exceed 25 acres in area.

Throughout the entire ordinance, emphasis is laid upon appearance. The standards to be applied by the planning board are general, not to say vague, but are standards recognizable by persons of intelligence and culture. Even "incongruity," "objectionableness," and "injury to the neighborhood" are among them. And questions of degree are inherent in most of them. In other words, appearance, or esthetics, is treated by the ordinance as a practical factor in its application exactly the same as public health, safety, or public welfare, and, indeed, as a part of the last. The ultimate question whether any particular action by the public authorities goes so far as to be arbitrary or unreasonable is left to the courts, just as it is today.

The ordinance may be termed a living commentary upon the legal stupidity of the early American decisions which cited but completely misapplied the Elizabethan dictum of Chief Justice Wray in *Bland v. Moseley*, reported in William Aldred's case, 9 Coke's Reports 58(b) ("for prospect, which is only a matter of delight, no action lies for the stopping thereof. . . . The law does not give an action for such things of delight"), and which held in effect that esthetic considerations are not a legal basis for the exercise of the police power in the control of private property—decisions now happily contradicted by many later American cases. Among these latter may be cited:

State ex rel. Twin City Building and Investing Co. v. Houghton, 144 Minnesota Reports, page 13 (1920)

Ware v. Wichita, 113 Kansas, p. 153 (1923)

State ex rel. Carter v. *Harper*, 182 Wisconsin, p. 148 (1923)

Preferred Tires, Inc. v. Village of Hempstead, 173 Miscellaneous, p. 1017; same case 19 New York Supplement (2d), p. 374 (1940)

Philbrick v. City of Miami Beach, 147 Florida, p. 538 (1941)

City of New Orleans v. Pergament, 198 Louisiana, p. 852 (1941). "Preventing or prohibiting eyesores in such a locality is within the police power."

And, of course, the great decision in the Massachusetts billboard cases—*General Outdoor Advertising Co. v. Dept. of Public Works*, 289 Mass., p. 149 (1935) Of the 15 cases consolidated for the purpose of trial and involved in that decision, one case was obviously one of esthetics pure and simple, involving the incongruity of a roof-sign on a building adjoining Boston Common. Indeed, in view of the court's decision that people are entitled to an "unannoyed journey" free from unwelcome intrusions, all 15 cases involved esthetics, although other considerations also entered into many of them.

Also the fine opinion of Judge Hargest, speaking for himself and three other judges in *Commonwealth v. Trimmer*, 53 Dauphin County Reports (Penna.), p. 91, in which, step by step, he shows the growth in the judicial concept of the right of the community to control offenses to the eye and finally concludes: "We definitely hold also, in the light of the foregoing later decisions, *that esthetic considerations alone, in this day, are sufficient upon which to base an exercise of the police power.*"

What the earlier American cases failed to recognize, and what some courts still fail to recognize, is the distinction between private esthetics and public esthetics. Justice Wray was dealing with a case of private esthetics—the desire of an individual landowner not to have a new building on a neighbor's land interfere with his view. The Wray dictum is quite correct when applied to private esthetics. No court today would support the sumptuary laws of several centuries ago which told the private citizen what he might or might not wear, upon the basis of its cost. But it is a far cry from these concerns of personal taste and choice to a generalization that in the planning of a community reasonable regulation of private property may not be based upon public appearance, even when the planning for appearance is not so inextricably tied in with matters of property values, tax-basis, etc., etc., that the esthetic regulation can be dissected out and placed by itself, i.e., is "separable." The concepts and terms "private esthetics" and "public esthetics" should now become accepted forms in legal classification and terminology.

Distinction Between Private Esthetics and Public Esthetics

In the writer's opinion the Niagara Falls ordinance would have been improved by an express separation of signs into two classes: (1) legitimate business signs relating to business upon the premises, and (2) intrusive outdoor advertising with some differences expressed as to the standards to be applied to each class, rather than leaving the degree of offensiveness or incongruity to the judgment of the planning board. Perhaps the absence of this express distinction, plus the standards that are expressed elsewhere, is to be interpreted as an implied direction to the planning board to note the inherent difference between the two kinds of signs and to come to decisions upon the basis of their comparative offensiveness. Whether or not the standards set up by the ordinance are too vague and indefinite to be recognized by the courts remains to be seen. What the administrative officers will do in the premises is also in the future. Whether the judgments of the administrative officers of today and of tomorrow will be consistent no one can say. Obviously the door is open to endless litigation of particular cases; but it is a fair question whether we must not accept that possibility as the price of the application of any standards of amenity flexible enough to be just and appropriate. There is a certain analogy here to the accepted system of permitted variances through the decisions of boards of standards and appeals.

I'd Hate To Be Buried There

By E. A. SELKE

IT ISN'T a bad town to live in, but I sure would hate to be buried here," said a young matron in a small discussion group. "I want to be sent back East in that event."

The town in which the members of this group were living was no isolated fishing hamlet, no ice-bound polar settlement, no high-flung mountain mining community. No, it was in the Midwest and had no fewer than 3,000 progressive, lively people. It was, withal, a pleasant place in which to live, to work, to rear one's progeny. It did not, it is true, have spreading elms, and its houses had little of that "lived-in look" so characteristic of houses that have survived the Mauve Decade. But it did have fine educational advantages; it could offer superior schooling from kindergarten through college. It had excellent and large stores, chain and private, for groceries, clothing, furniture, and hardware. There were good hotels, motels, and theaters. It had guided recreation for young and old.

Many of the citizens belonged to social and study clubs that kept them intellectually stimulated. There was a fine golf course, riding academy, flying field, and other facilities for sports. Lecturers and musical groups of note "played" the town each year.

The town hummed with life, opportunity, and activity. Nevertheless, with all its virtues it was not a town in which anyone accustomed to seeing better cemeteries would care to be buried. There was not a beautiful cemetery in any small community within a radius of 75 miles from the place.

Unkempt grounds and kneelength grass, often tall enough for safaris after big game, were the usual cemetery landscape. Sagging and sinking tombstones, markers badly askew, proved the rule rather than the exception in most of the neighboring communities. Generally speaking, unprepossessing cemeteries are more or less taken for granted in small midwestern towns of the United States . . . drab little graveyards on wind-blown hills, naked of trees, of hedges, and innocent of care. Only a new grave here and there and iron gates leaning at drunken angles proclaim that the cemetery is still functioning.

PHOTOS COURTESY HARE & HARE, LANDSCAPE ARCHITECTS, KANSAS CITY, MO., AND THE AMERICAN CEMETERY, NEW YORK.

A crowded and unkempt burial ground detracts from community appearance.

What Civic Pride Might Do

However, in even very rural areas of the Midwest, most villages are not too far apart to pool resources and jointly operate beautifully groomed cemeteries more often than is now the case. These could be a credit to the participating communities. Civic pride could very well develop truly beautiful resting places for those whose sleep is eternal. Why shouldn't one see along every main highway such lovely cemeteries as one finds in many European towns, and in some of the small Latin-American communities?

Some big cities in the United States have developed marvelously lovely cemeteries, but there is a field to "sell" to small villages the idea of perpetual care, artistic markers, and well-landscaped grounds for burial. This is one field where the small towns show a desided lag compared with their progress along other lines.

True enough, quite a few small towns are developing rather fine cemeteries today. But for every such community there are scores that seem not to care at all in what circumstances mankind is laid to rest. When will many of our small towns awaken to this crying need? When will America's "Main Street" awaken to the need of making its adopted and native citizens proud to be buried within the environs of a small, yet handsomely artistic cemetery near by?

Erect markers, spacious, well-groomed, and beautifully landscaped grounds, make this cemetery an artistic sight.

Careful consideration should be given to landscape design as it constitutes a major part of cemetery planning.

Water Service Pipe Corrosion

By ARTHUR I. HEIM
Copper & Brass Research Association
New York, N. Y.

CORROSION of pipes in large mains and distribution systems is obviously a serious and direct problem for the water industry. And any review of water-supply literature will show the thought given to it.

Apparently of less immediate concern is the subject of corroding water-service lines and water-distribution piping within homes and industry, probably because it is the plumber's responsibility rather than that of the water department itself. Actually, it should be of even greater importance, since it concerns the water user, and the department or city often specifies what pipe should be used.

If the treatment of water to prevent or control corrosion were a panacea, many problems would be eliminated. The difference lies in the consideration of how little is known of the fundamentals of corrosion. Actually, corrosion failures of modern piping materials, particularly brass pipe and copper tube, are rare. Nevertheless, if a piece of brass pipe or copper tube fails in a single installation out of 1,000, it is this one we hear about, not the 999 that have given no trouble. Before we consider treatment as a remedy for even one out of the 1,000, we should try to find out why just this one installation failed and not the one next door. Why does one length of pipe or tube fail and not the one immediately adjacent to it? In fact, why one particular spot and not one just an inch away? Some answers have been obtained through thorough studies of failures which show that unusual or abnormal environmental factors are the chief cause of such difficulties, and that the cause cannot be found in a lack of uniformity in the piping material.

Dezincification

Much has been written and said about the type of corrosion known as dezincification, a form of attack peculiar to brasses with a high zinc content. With dezincification corrosion, as with other types, the condition is by no means universal or even common, but it is most manifest with waters with a low pH and a high free carbon dioxide content. With yellow brass and Muntz metal pipe, both somewhat subject to dezincification if the conditions are right for it, there are many thousands of installations throughout the country that have been giving entire satisfaction for many years and will undoubtedly continue to do so. In fact, some of the earliest installations of these piping alloys made at least 50 years ago are still in service, and their present condition indicates that, barring the unforeseen, they will last for centuries.

However, even though failures were infrequent and in isolated communities, the continuation of the sound policy of improving products wherever possible led the manufacturers of brass pipe to stop the production of yellow brass and Muntz metal pipe about seven years ago. The improved product in this case has been obtained through the use of red brass for the piping material. Red brass is an alloy of 85% copper and 15% zinc, an alloy that is definitely not subject to dezincification attack. Red-brass pipe has had, over the years, a remarkable performance record.

Immunity to Corrosion

Is the red-brass pipe and copper tube entirely immune to corrosion by water? Unfortunately, the answer must be "No," yet it can be safely said that these materials offer a maximum of resistance to the corrosive effect of an aggressive water, and a water that will attack red-brass pipe or copper tube to any degree may be expected to attack other piping materials more aggressively.

One form of attack sometimes noted with a few types of water in connection with red-brass pipe and copper tube is so-called "green staining" or "green water," where a slight bluish or greenish tint is imparted to the water by minute traces of dissolved copper. Analysis of such water generally will show copper in the order of two parts per million, certainly far from an alarming amount. This greenish tint is most noticeable in new installations and ordinarily disappears in a relatively short time. The infrequency with which complaints are received justify the conclusion that green water is neither prevalent nor serious. However, for the few cases where the condition persists and may be considered objectionable, a simple treatment procedure that can be set up by any local plumber is recommended by the Copper and Brass Research Association, 420 Lexington Avenue, New York 17, N. Y., in a free pamphlet that will be sent to those requesting it.

27,000 kw of Diesel Power Meets Peak Load Demands

THE Northern States Power Company was faced with a problem common to most utilities in the fall of 1946, that of providing adequate generating capacity to carry the peak loads in 1947. It was obvious that steam capacity, planned to be in operation, would be delayed due to strikes and other factors beyond the companies' control.

It was, therefore, decided to install approximately 27,000 kw of diesel generating capacity. Twenty-seven units of approximately 1,000 kw each were installed in groups of two, three, or four in 10 strategically located plants on the interconnected system which extends across Minnesota into Wisconsin and South Dakota. How this was done was explained by E. F. Carlson and H. E. Rhoades, of the Northern States Power Company, Minneapolis, Minn., at the recent Midwest Power Conference held in Chicago.

Each of the plants is associated with a distribution sub-station, the generators of which are connected to the distribution feeder bus. This connection provides a direct supply for load in the area in case of line outages, relief for overloaded transmission lines and transformer banks, solution of voltage problems, as well as additional system capacity.

Although the final commitments were not made until February 1947, 14 of the units were in service for the 1947 peak-load period and contributed substantially to the ability to render uncurtailed service to customers. The generating units, auxiliaries, and switchgear, complete with the required synchronizing, metering, and protection, are housed in a steel-frame composition-covered building of simple construction. One section of the building, 18 feet by 43 feet, is common to each installation for switchgear and general operation, and an additional section, 14 feet by 43 feet, is added for each engine-generator unit.

Of the 27 units previously mentioned, 15 were General Motors and 12 were American Locomotive. All the other major equipment, such as switchgear, jacket-water coolers, fuel-oil system, and heating system, is duplicated in all of the installations. The use of duplicate equipment greatly simplified the design, construction, and operation of these plants.

The addition of diesel plants in the manner outlined above was a new venture with this company. The first four years of operation have shown that they have performed all the functions for which they were installed in a very satisfactory manner.

The Municipal Bond Market

Debt and Tax Limits Stimulate Municipal Fiscal Ingenuity

By CATHERINE CLARK
Municipal Service Department
Dun and Bradstreet, Inc.
New York, N. Y.

DEBT and tax limits are among the most successful methods devised by state legislatures to make municipal financial administration a stimulating occupation. Whether or not the Solons had this end in mind, such limits have been the means of developing ingenuity and resourcefulness in many a city official—and his attorney. The limitations to which no one has been able to find a valid exception are rare.

While debt limits are usually stated as a ratio to the assessed valuation, tax limitations may be in the form of a rate, a gross amount, or a per capita amount. (This last form shows that legislatures can be ingenious, too; it was developed in Minnesota to supplement the rate limits which were ineffective in Iron Range communities, with their high assessed valuation per capita.) A limit may apply to all overlapping units of government, to one unit only, or to a single purpose. It may include or exclude taxes for payment of debt, or certain types of debt. It may be inflexible, or it may be adjustable by referendum or some other means (in Minnesota the per capita limitations are now tied to the consumers' price index). The combinations are numerous, and almost every mathematically possible one has been tried somewhere.

Unwise Approaches to a Desirable Objective

Obviously, the purpose of tax limits is to keep general property taxes within reasonable bounds, an objective with which few would quarrel. But property taxes are only one phase, albeit an important one, of municipal finance; and tax limits, unless they are part of a comprehensive and intelligently planned program that includes positive as well as negative measures do not always effect the desired result.

For example, it is clear that unless there is also control of the methods of assessment, a rate limit may be ineffective. Furthermore, unless the tax limit applies to taxes for debt service, its force is greatly weakened. If it does apply to debt service, municipal credit standing may be impaired. Since the early 1930's Michigan has had an over-all tax rate limit—optional as far as cities were concerned—which, until it was recently liberalized and made inapplicable to cities, was so stringent that it was virtually impossible for the affected units to issue bonds; they simply could not levy enough taxes to pay them. As a result, for a period of some fifteen years there were practically no schools built in Michigan, and very few public improvements made by the cities which had voted to come under the limit.

Such stringent limitations, however, are comparatively rare. More frequently, taxes for debt service are excluded, wholly or partially, from the limitation, either specifically or by interpretation. For example, in Iowa the interpretation that tax rate limitations merely restrict the amount of bonds which may be issued, and that once bonds are issued, sufficient taxes must be levied to pay them, was eventually written into the law. Even when there is no such general interpretation, the statutes frequently make some exception for the levy of taxes for funding or refunding bonds.

Once such a loophole has been established, municipalities are not slow to take advantage of it. There are numerous examples of municipalities which, when they are unable to levy sufficient taxes for operating purposes, simply issue funding bonds to finance the extra expense. A legislature which sets up a separate tax rate limit for each municipal function—and in some states a municipality may be subject to 50 or 60 separate rate limits—is simply inviting this practice. It is an anomalous situation, to say the least, for a city to have to issue funding bonds because it has a deficit in one fund while its 49 other funds have unused taxing power.

Granting, for the purposes of this discussion, that the state has a legitimate right to regulate municipalities in order to insure their financial health and to keep the taxpayer's burden within reasonable limits, what are the best means of attaining these ends? There are still too many examples of cities' having to run to the legislature every time they need another dollar, but there are also gratifying signs that the old piecemeal approach, with its emphasis on negative prohibitions, is no longer accepted as the *ne plus ultra* of state supervision of local finance.

Let us look at some examples of these newer ideas, not necessarily in the order of their importance. In the first place, there is increasing recognition that the state can perform a real service by setting up minimum (but not maximum) standards in certain fields, such as budgeting and accounting; or by providing for a uniform basis of assessment, or equalization to a uniform basis, throughout the state. There is also some recognition that fund tax rate limits are an almost insuperable handicap to good budgeting and accounting, and there is a tendency to reduce the number of such limits.

On the revenue side, there is awareness of the need for broadening the revenue system and of the fact that some taxes are suitable for local administration, some for state administration. Within recent years many states have given their municipalities power to tap new sources of revenue, and there has been far greater sharing of state-collected taxes with local units. Such positive measures have often been more effective than tax limits in keeping property taxes down.

Another healthy sign is the tendency toward what might be called "performance" regulation of municipal finance. Cash basis budget laws are a good example of this approach. Such laws do not tell a municipality how it must spend its money. They do require that appropriations be kept within available revenue; that revenue from property taxes and other sources be estimated on the basis of actual experience; and that the budget provide for payment of outstanding current liabilities.

As far as bonds are concerned, debt limitations are now supplemented by more positive measures: requirements that the tax levy for payment of bonds be certified when the bonds are issued and that bonds mature serially within the life of the improvement to be financed, for example. New York State now requires that the "down payment" on new capital improvements (a certain proportion of the cost) be financed from current revenues.

The millenium is still far away, but these and similar measures do offer encouragement that intelligent appraisal of state-local fiscal relationships is going on.

Representative Municipal Bond Sales, July 1-11, 1951

Date of Sale		*Amount*	*Purpose*	*Average Maturity (Years)*	*Net Interest Cost Per Cent*
7- 2	Anderson Co., Tenn.	$ 1,000,000	School	17*	3.25
7- 6	Brunswick, Ga.	200,000	**Municipal Bldg.**	**20-1/2**	**2.532**
7- 6	Indianapolis, Ind.	1,750,000	Airport	10-1/2	1.66
7- 9	Newport News, Va.	417,000	Public Imp.	11-1/6	2.174
7-10	Chesterfield Co., Va.	1,000,000	Water Revenue	12-2/3	3.225
7-10	Cleburne Ind. School Dist., Tex.	950,000	School Bldg.	19-1/3*	3.0626
7-10	Denver, Colo.	13,000,000	Water	15-1/2*	1.907
7-10	Fort Wayne, Ind.	6,000,000	Water Revenue	15-1/6	2.4702
7-10	Tulsa Co. Ind. School Dist., No. 1, Okla.	1,800,000	School	11-2/3	2.1522
7-11	State of California	25,000,000	Veterans	12*	1.89
7-11	Philadelphia, Pa.	20,100,000	Various	17-1/2	2.5148

* Average to maturity. Bonds partly callable before maturity.

How Recordak microfilming helped simplify

The biggest bookkeeping job in the world

At the Social Security Administration in Baltimore, Md., you'll find the biggest bookkeeping job in the world—keeping lifetime track of the wages paid to over 99 million employed persons in the United States.

And here, you'll find Recordak microfilming at work—simplifying the operation in this manner—

99 million ledger sheets eliminated by microfilming punched-card listings.

As the employers' quarterly reports of taxable wages paid to each employee are received, punched cards are prepared, balanced, and accumulated in account-number sequence.

At the end of the fourth quarter (in the cyclical work schedule) . . . a tedious and costly bookkeeping operation is eliminated . . . a revolutionary advance takes place—

The punched cards are no longer posted to individual employee ledger sheets. Instead, they are "run off" as continuous listings, in account-number sequence.

And then Recordak microfilming copies these bulky listings with photographic accuracy and completeness . . . recording a year's activity for a thousand employees on approximately 2 ft. of 16 mm. film.

Saves tremendous amounts of filing space

Duplicate film copies are made from each roll of Recordak Microfilm. Then these copies are cut into "1,000-account" sections, and spliced to reels which contain the previous film record of these accounts—including copies of the original ledger sheets.

This simplified system will enable *Social Security* to keep a 35-year record of 1000 employees on a roll of film that's no larger than your palm. *Contrast this* with the old system: 3 ledger sheets would have been required for each account; 3000 for 1000 accounts; 297 million for 99 million accounts.

Protection increased

The master film records—the photographically accurate and complete Recordak Microfilms—can be vault-stored conveniently . . . another advantage over the bulky ledger sheets, which were exposed to constant wear-and-tear, and the possibility of fire and loss!

Just another example, this, of the way Recordak microfilming is serving Government . . . and 65 different types of business . . . thousands of concerns.

Write today for a free copy of "50 Billion Records Can't Be Wrong." It cites typical short cuts made possible by Recordak microfilming . . . gives details on the complete line of Recordak Microfilmers *now offered on an attractive purchase or rental basis.* Recordak Corporation (*Subsidiary of Eastman Kodak Company*), 444 Madison Ave., New York 22, N. Y.

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RECORDAK

(Subsidiary of Eastman Kodak Company)

originator of modern microfilming—and its application to government routines

TROLLEY COACHES come in RIDING goes up in Halifax Nova Scotia

● Trolley coach rider appeal has worked again. This time in Halifax, Nova Scotia, where Nova Scotia Light and Power Company operates 75 electric trolley coaches.

Back in March, 1949, Halifax became the first city in North America to be served wholly by trolley coaches. Within a few days, riding began to go up . . . 14.5 per cent for the last eight months of 1949. Again in 1950, riding increased. It was 2½ per cent higher than in 1949, 17 per cent higher than the old system operated with motor buses and streetcars.

Originally, Halifax planned to run 65 coaches. But increased riding made it necessary to add six more coaches in 1949, four more in 1950.

In its annual report, Nova Scotia Light and Power Company described the arrival of the trolley coach as the "big event of the bicentennial year." A Halifax newspaper commended the company for "foresight in establishing this fine new system."

And the 100,000 people of Halifax expressed their approval, praised trolley coaches in letters to the company and to the newspapers, supported them in a public opinion survey. But most important of all, they expressed approval where it really counts—by putting more money in the fare box.

ELECTRIC TROLLEY COACHES

Now Serving 56 U. S. and Canadian Cities

Ohio Brass

MANSFIELD OHIO, U. S. A.

LINE MATERIAL AND CAR EQUIPMENT FOR TROLLEY COACHES AND STREETCARS

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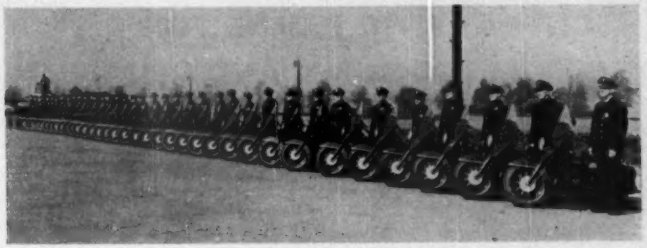
4160-f

Traffic Control and Facilitation



The author, far right, and 39 officers with Harley-Davidson Hydra-Glides.

One Motorcycle Is Worth Six Cars in Traffic Control

THE DETROIT Police Department is composed of 15 precinct stations, the Stationary Traffic Division, and the Motorcycle Division, in addition to other units in uniformed service.

Personnel of the Motorcycle Division consists of 165 men; the equipment is 80 Harley-Davidson motorcycles, 75 Ford two-door cars, and 3 commando cars. These commando cars each carry 13 patrolmen and 1 sergeant, and are fully equipped with gas, riot guns, machine guns, and everything necessary in case of emergency. The motor division ordinarily patrols the main thoroughfares and areas where accidents are on the increase, and responds to complaints from persons residing in areas where traffic requires added supervision.

While the motor division takes care of any and all kinds of police work, including parking violations, it is a division separate from the precincts and, under ordinary circumstances, the precincts handle parking enforcement.

The Department is approximately 80% motorized, with two men to a scout car. Very few men walk beats. Twenty three-wheel motorcycles have been ordered; 16 will be assigned to precincts and four to the Stationary Traffic Division. It is expected because this machine is highly maneuverable and requires but one man, that parking conditions throughout the city can be controlled with a great saving of manpower. Statistics prove that one man on a three-wheel cycle can do more to control illegal parking than six officers walking beats. Scout cars also do their share of this control, but the car itself is an added impediment to the free movement of traffic. With a special squad giving complete attention to the parking situation, violators will rarely avoid tickets. At present, it is more or less a hit-and-miss proposition of enforcement, as the scout cars are radio-equipped and a great deal of their time is taken up by routine police matters.

This department has used motorcycles for over 35 years, and we have found that one motorcycle is worth more than six cars in the control of traffic. The cycle parked at the curb, even without the officer near it, makes the driving public conscious of the fact that traffic in that area is being supervised. A change in the driving habits of the public and a more careful observance of the law is very noticeable. In our budget for last year and this year, we requested an additional 75 motorcycles, and would have been willing to forego 20 cars. Because of financial reasons, this request has been deleted from the police budget.

It is our firm belief that the 20 three-wheel motorcycles, which are to be delivered this summer, will go a long way toward solving our problem of the control of illegal parking.

JAMES A. HOYE, *Director of Traffic Department of Police Detroit, Mich.*

Results of Traffic Counts In Glendale, Calif.

DURING the latter part of 1950, 8-hour and 16-hour traffic counts, using Denominators, were made at 20 intersections in the City of Glendale, Calif. The counts were made by students of Glendale College under the supervision of our traffic engineer.

These counts were for the purpose of making decisions in the installation of traffic signal systems and curb-parking restrictions, and for obtaining general information regarding traffic flow, turning movements, and factors for the future use of short-time counts.

These counts showed that the increase in traffic flow over previous counts was more than had been assumed, that traffic-signals were warranted immediately at certain locations and in the near future at other locations, that certain parking restrictions were necessary, and that "no left turns" regulations were required at several intersections during certain hours. In addition, these counts, augmented by the conversion of short counts to 24-hour counts, permitted the plotting of an up-to-date 24-hour volume flow map.

Based on the information obtained by these counts, traffic signals have been ordered to be installed at two locations, parking has been prohibited at all times at one location, and parking has been prohibited between 7 a.m. and 9 a.m. and between 4.30 p.m. and 6:30 p.m. at still another location. The prohibiting of parking between 7 a.m. and 9 a.m. on one side, and between 4.30 p.m. and 6:30 p.m. on the other side of one street is under consideration, as is the prohibiting of left turns between 4:30 and 6:30 p.m. at several locations.

J. C. ALBERS
City Engineer and Street Superintendent Glendale, Calif.

San Salvador Has Mastered Traffic Signals

SAN SALVADOR, El Salvador, is one of the first large Central American cities to adopt traffic signals, according to the American Public Works Association. When the stop-and-go signals were first introduced late last year, some drivers moved only on red; others always moved on green. And the amber threw everyone into complete state of confusion.

Clarity came with the distribution of handbills explaining what the lights were all about. To insure their reading, the city set the fine for passing stop lights at 25 colons—El Salvador's dollar, worth 40 cents in American money. Effectiveness of the $10 fine was noticeable immediately. The accident rate dropped considerably, and today the traffic moves along the street of the capital city with a minimum of horn-blowing.

PRISMO SIGN KIT

PRIMSO REFLECTO KIT

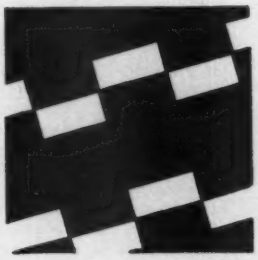
PRISMO PRODUCTS

REFLECTIVE TRAFFIC PAINTS FOR LONG RUN ECONOMY AND RELIABILITY

. . . PROVEN BY OVER 12 YEARS TEST!

Experienced road maintenance executives realize that Prismo Products carry a *plus factor*. It is the *know how* of Prismo development technicians based upon years of painstaking research, testing and resulting product improvement. Prismo Products constantly undergo actual road trials under the severest weather and road conditions. The *plus factor* of Prismo Products . . . in other words the *know how* of the Prismo Safety Corporation pays you dividends in longer wear and absolute reliability.

The new Reflecto Kit offers the most efficient reflective type of material on the market. A combination of the toughest plastic binder available and millions of tiny reflective spheres. The combination greatly increases the reflective brilliance and wearability of Prismo road markings. Both the Prismo Reflecto-Kit and Prismo Sign Kit reflectorize road markings and signs with a minimum of application effort. They are easily applicable by brush, roller, spray or silk screen method. Prismo Plastix are sections of brightly reflective plastic which are permanently affixed to pavement by a strong plastic binder. Plastix make efficient and long lasting cross walk and other pavement markings. Zee-Gards protect freshly painted lifelines and road and street markings.



PRISMO PLASTIX

PRISMO ZEE-GARDS

PRISMO LIFE LINE

A reflective center line that outwears other traffic paint by 3 to 5 times. Prismo Lifeline is absolutely reliable under the toughest traffic and weather conditions.

Write today for full descriptive material on all Prismo Products . . .

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Big-Time Parking On the Increase

TO THE increasing number of municipalities setting up parking authorities, have been added New York City; Washington, D. C.; San Francisco; Pittsburgh; Augusta, Maine, and the up-state New York cities of Syracuse, Binghamton, Elmira, and Peekskill, says the American Municipal Association.

Typical of the powers granted these authorities are those which were given to the New York City agency by the state legislature last year. Subject to zoning law, the parking authority has the power to buy, construct, or operate off-street facilities and to install and collect fees from the use of parking meters. The tax-exempt authority is empowered to issue its own bonds up to a limit of $100,000,000, and to pledge all its revenue, including that received from parking meters, for financing, interest, and redemption of obligations.

Success of the operation of the parking authorities in some cities is pointed up in Pittsburgh, where a long-term program was started last year with the construction of four garages of the open-wall type from three to five stories high. When completed, these garages will handle 1,917 cars and will cost about $4,500,000. Two more structures for short-time parking will be undertaken—one an underground garage to hold 1,090 cars. After construction of the six central-area garages, the Pittsburgh program envisages development of all-day parking facilities located along the fringe of the central business district.

WANTED
BY THE
PHOENIX POLICE DEPARTMENT
YOUR COOPERATION IN SOLVING OUR TRAFFIC PROBLEMS ON CENTRAL AVENUE BETWEEN CORONADO STREET AND VAN BUREN STREET.
NO PARKING
4 P.M. to 6 P.M.
EXCEPT SATURDAYS AND SUNDAYS
Traffic Laws Should Be Obeyed Rather Than Enforced.
Thank You

Cars illegally parked on a Phoenix thoroughfare receive this warning.

ACSC Has New Traffic Engineer

ROBERT H. HARLESTON, Jr., formerly resident traffic engineer associated with Smith, Dibble and Company, traffic and planning consultants, of Columbia, S. C., was appointed traffic engineer on June 1, 1951, in the Accident Prevention Department of the Association of Casualty and Surety Companies, 60 John St., New York 7. Mr. Harleston received his B.S. degree at the University of Maryland and recently completed a study in traffic engineering at the Yale Bureau of Highway Traffic.

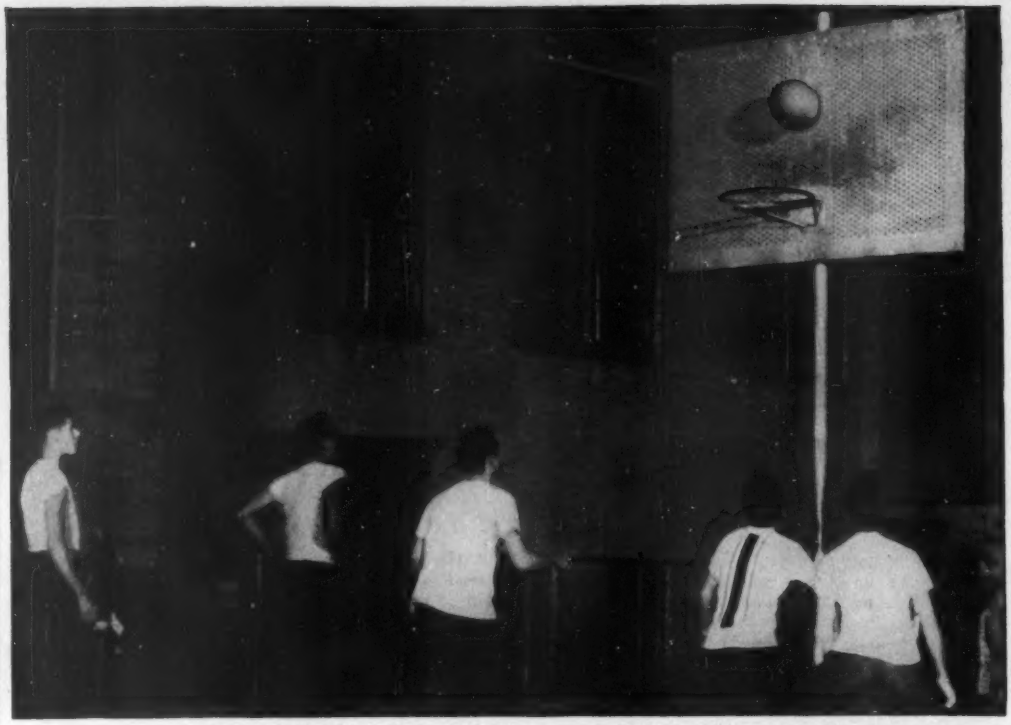
As a transportation and safety specialist, he will conduct studies in traffic engineering projects aimed at saving lives and preventing injury and property damage. He will endeavor, through the Association's publications, to apply these lessons broadly throughout the nation, according to Julien H. Harvey, manager of the Accident Prevention Department. The "Getting Results Through Traffic Engineering" series of monthly bulletins, started in 1939 to encourage solution of traffic and accident problems of engineers, and now reaching more than 3,000 engineers and traffic officials regularly, will be among the publications handled by Mr. Harleston.

Portable Battery Traffic Signals at Peak-Busy Intersections

A NUMBER of the intersections in San Rafael, Calif., are over-busy during a couple of peak hours, and for the rest of the day and night do not require traffic signals. To serve the peaks we place portable storage-battery traffic signals at these intersections. They are supplied by Walter Nagle Company, of Santa Rosa, Calif., and manufactured by Burbou Industries, Inc., of Sacramento, Calif. To get these signals to the intersection and haul them away we use a flat trailer furnished by the same organizations. It is drawn by a Harley-Davidson Servi-Car. The Police Department owns two Servi-Cars and a Harley-Davidson solo motorcycle equipped with Link-Ventric two-way radio.

FRANK KELLY, *Chief*
Police Department
San Rafael, Calif.

Portable traffic signals returning from intersections in San Rafael.



Scene from the 16mm film "A Chance to Play." Your community, like this one, can have a successful after-dark recreation program. G-E can help you sell the program and plan the installation.

From complete parks to single units—G-E can help with your RECREATIONAL FLOODLIGHTING

Planning sports floodlighting? General Electric's "Manual of Floodlighting Plans" covers all types of sports, gives complete specifications from the exact location of poles to wiring details! The hardest part of *any* lighting job—the engineering—is already done for you when you refer to this complete manual.

Have an unusual floodlighting problem? Highly-trained General Electric lighting specialists are available for on-the-spot consultation with you. The rare installation that can't be handled by your local contractor or from standard plans included in General Electric's "Manual of Floodlighting Plans" will need the sound estimating judgment and versatile layout experience of your G-E Lighting Specialist. Call or write him at your local General Electric sales office.

Use this 16mm Movie! Make it easier to sell your community on the need for adequate recreational facilities. Show interested groups this dramatic documentary film, produced by the March of Time for the General Electric Company. Write to Section 451-163, General Electric Company, Schenectady 5, New York, for complete information on either the "Manual of Floodlighting Plans" or the film "A Chance to Play." Your local G-E distributor or G-E sales office will be glad to help you plan your recreational floodlighting.

Civic leaders approve a scale-model of proposed recreation facilities. Scene is from the 16mm film, "A Chance to Play."

GENERAL ELECTRIC

451-163

A City's Parking Meters Are Big Business

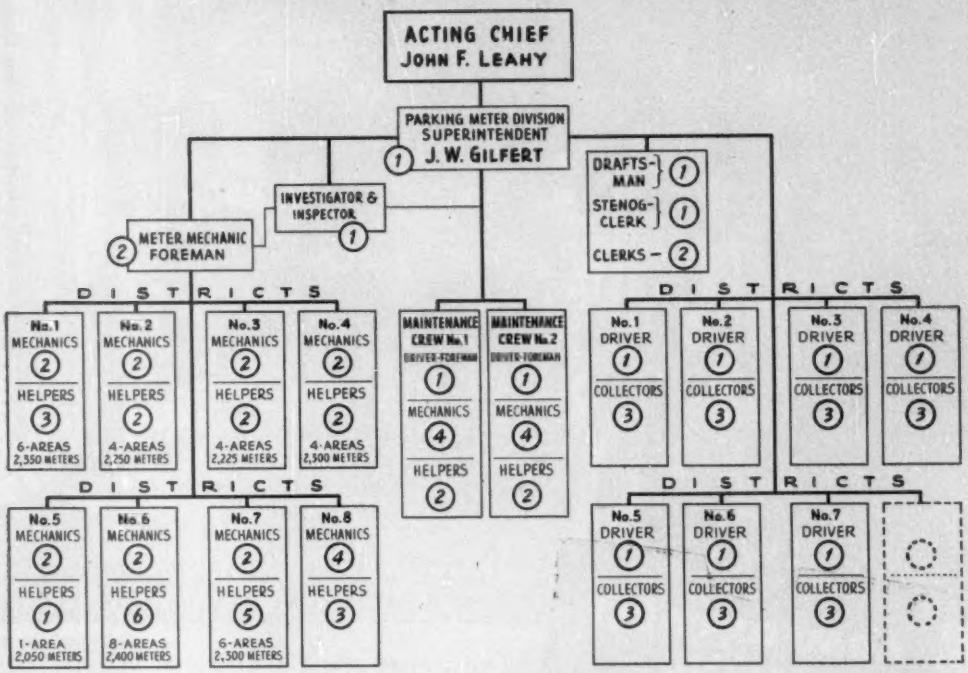

ACTING CHIEF
JOHN F. LEAHY
PARKING METER DIVISION
SUPERINTENDENT
1 J. W. GILFERT
INVESTIGATOR & INSPECTOR 1
2 METER MECHANIC FOREMAN
DRAFTSMAN 1
STENOG-CLERK 1
CLERKS – 2
DISTRICTS
No.1 MECHANICS 2 HELPERS 3 6-AREAS 2,350 METERS
No.2 MECHANICS 2 HELPERS 2 4-AREAS 2,250 METERS
No.3 MECHANICS 2 HELPERS 2 4-AREAS 2,225 METERS
No.4 MECHANICS 2 HELPERS 2 4-AREAS 2,500 METERS
No.5 MECHANICS 2 HELPERS 1 1-AREA 2,050 METERS
No.6 MECHANICS 2 HELPERS 6 8-AREAS 2,400 METERS
No.7 MECHANICS 2 HELPERS 5 6-AREAS 2,300 METERS
No.8 MECHANICS 4 HELPERS 3
MAINTENANCE CREW No.1 DRIVER-FOREMAN 1 MECHANICS 4 HELPERS 2
MAINTENANCE CREW No.2 DRIVER-FOREMAN 1 MECHANICS 4 HELPERS 2
DISTRICTS
No.1 DRIVER 1 COLLECTORS 3
No.2 DRIVER 1 COLLECTORS 3
No.3 DRIVER 1 COLLECTORS 3
No.4 DRIVER 1 COLLECTORS 3
No.5 DRIVER 1 COLLECTORS 3
No.6 DRIVER 1 COLLECTORS 3
No.7 DRIVER 1 COLLECTORS 3

Chart for servicing Philadelphia's parking meters. Mr. Leahy was Acting Chief at the time the chart was prepared.

By JOHN F. LEAHY
Chief
Department of Public Safety
Philadelphia, Pa.

ON THE basis of two years' experience with 2,360 parking meters in two areas, the City of Philadelphia has ordered 15,000 Duals at the rate of 500 per month beginning May 1, 1951. On July 26, 1949, 760 meters were installed in the Germantown business district. They were installed on a 70-30 basis and paid for on May 5, 1950. In February 1950, 1,600 meters were installed in the Frankford business district and paid for on January 23, 1951.

During the first 12 months, the Frankford meters collected $100,163; and in their first full year the Germantown meters collected $72,826. Police found that one patrolman on a Harley-Davidson Servi-car can patrol 400 meters, so that the 2,360 meters are supervised by six patrolmen. Similarly, the Traffic Engineering Bureau found that three mechanics, three collectors, and a money truck and chauffeur could service these meters on the basis of one collection a week from every meter.

The collection truck carries two hand trucks which the collectors used to pick up the coin boxes from meter to meter. The coin boxes are conveyed in kits on hand trucks to the city tax office. Here the money is counted by a Brandt machine, and the boxes are sealed. Each day the Traffic Bureau truck delivers its collections of the day, at which time the driver picks up the previous day's resealed boxes, and also counts receipts for delivery to the City Treasurer's office. The truck driver takes a receipt from both the Receiver of Taxes and the City Treasurer.

Those two areas served as proving grounds not only for the city officials but for the merchants as well. An incidental advantage was a decided improvement in truck deliveries. Without meters, the curbs were blocked solid with parked cars.

Businessmen from all over the city visited the areas and requested that meters be installed in their neighborhoods. In each district, the councilman was given the job of sounding opinion and arranging for an installation. The 15,000 new meters will be installed in 29 additional business areas. None are on Broad or Market, Philadelphia's famous main business streets. They will be located not far away, however, on Spruce, Pine, Lombard, and South Streets.

Personnel for servicing the complete parking-meter installation have already been requested in accordance with the organization chart. For policing the 17,360 meters, a force of 46 patrolmen in Servi-cars will be required. For the additional 15,000 meters, the city was divided into seven areas each using 2,000 to 2,400 meters. Mechanics and collectors are called for on the basis of one each per 800 meters. The new organization contemplates 93 men at a payroll cost of $230,000, with an annual income, for the general fund, amounting to $1,360,000.

One of the hand trucks used in Philadelphia for meter coin collections.

HELPS KEEP BUSINESS IN TOWN

Listen to the Mayor of Kankakee, Illinois:

"We are getting back dollar for dollar, in increased business, everything we invested in better street lighting."

Or to the merchants of Fifth Avenue, Gary, Indiana:

"Our new street lighting has stepped up traffic and greatly increased evening window shopping. Result—substantially increased sales."

Community after community is finding that trade follows the light, that street lighting saves more than it costs. You don't see out-of-business signs along well lighted streets. You do see property values increase and business stabilize. Accident rates decline, insurance rates are reduced and crime is easier to control.

Your electrical utility is keenly interested in your community's prosperity. They have the know-how and the experience to help you modernize your street lighting quickly on an economically sound, planned basis. They can call on General Electric's services for planning and consultation. G-E street lighting equipment has the flexibility to meet the specific needs of your community. *Apparatus Department, General Electric, Schenectady 5, N. Y.*

Let your electrical utility street lighting engineer show you how comfortable seeing SAVES YOU FAR MORE THAN IT COSTS.

GENERAL ELECTRIC

452-109

Outdoor Lighting

Why Not Have Modern Lighting in Your City?

The need can be seen at a glance; the desire for adequate street lighting follows. But there have been so many developments in fixtures, supports, cable standardization, and costs that selection of type, method, and specific equipment is slowed by spotty, if any, knowledge of enlightened procedure in obtaining comfortable seeing, operation, and maintenance. These three papers, presented before the Northeastern District Conference of the American Institute of Electrical Engineers, on May 2, 1951, discuss where we are and where we're going concerning the latest street-lighting equipment.

What's Known and Needed In Street Lighting

By D. A. GAFFNEY
District Superintendent
Niagara Mohawk Power Corp.
Utica, New York

SOMEONE once said, in reference to the operation, maintenance, and additions to an electric transmission and distribution system, that the existing state of the entire plant could be judged by the condition of the street-lighting system. This may not be entirely true, but it is certainly so in the operations of those systems where modern street-lighting units are not being purchased.

Street lighting, as we know it, started about 45 years ago with the so-called "flat shades." Thousands of these are still being installed each year. Later, there were units consisting of a small piece of porcelain. Thousands of these units are still being repaired and replaced every year.

For a decade or two before 1930, a considerable expansion in street-lighting systems took place. Specific requests were made for installation of street lights on various thoroughfares for the first time. In a trip across country, it will be noted that many of the same luminaires are still in service, and too many without the benefit of the glassware originally installed with the unit.

As 75% of the type of street-lighting units mentioned are still in service, there is a tremendous job ahead to modernize street-lighting systems.

However, to do this job it may be necessary to bring about agreement among several individuals. Salesmen representing electrical-equipment manufacturers can usually sell most equipment with ease—except street-lighting equipment. They know from experience that, in some cases, long discussions must take place. If the new work involves a large installation of ornamental lighting standards, much difficulty may be experienced in determining the type of standard to be used, the height of the standard, and the types of cable to be used underground and in the standard itself.

Need for More Information

There is a definite need for some type of educational program to inform those responsible for the final decision on the installation of new street-lighting equipment. They should be familiar with the use of standardized materials, such as so-called "slip fitters," heads, externally wired heads, glassware with good distribution, brackets, "streamlined" ornamental lighting standards, and new economically priced cable.

Those of us whose job it is to replace old street-lighting units with modern units, install new overhead and ornamental systems, and maintain existing lighting systems, are conversant with the desirable equipment available for use today. However, we would like to see luminaires with even better distribution of light; research will no doubt accomplish this.

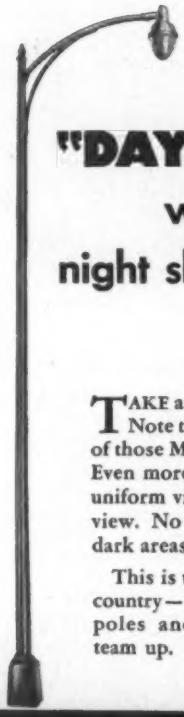
Where was Blinky when the lights went out? Busy playing gremlin—you'll see him on the next few pages.

Much has been done to overcome excessive glass breakage and crystalization of glass. Perhaps methods can be worked out to cut down excessive costs. An important advance is standardization which permits the interchangeability of aluminum reflectors, etc., regardless of manufacturer.

Water may be bothersome to systems consisting mostly of "top-mounted" units. Where these are installed, we would like to see the use of tapered threads for the mounting of pendant-type units. This should help overcome water troubles.

Burning hours of incandescent lamps (lamp life) is good. On group replacements, a few lamps fail in about the first 10 days, but not too many. With the cost of labor still going up, is it possible to develop lamps with increased burning hours? As the use of

Pittsburg, Kansas, one of many cities throughout the country where Monotube street lighting poles help maintain higher safety standards.



"DAYLIGHT" works the night shift now!

TAKE a second look at these two pictures. Note the clean-cut, attractive appearance of those Monotube poles in the light of day. Even more important, consider the bright, uniform visibility you get in the nighttime view. No spotty shadows—no dangerous dark areas. It's almost like daylight.

This is typical of many streets across the country—where Monotube street lighting poles and modern lighting equipment team up.

With Monotubes, street lighting can be planned and brought to highest efficiency. The standard ranges of pole size, gauge, height, bracket arms, and accessories meet every modern street lighting need—economically, efficiently!

Find out how your street lighting plans —*and* your community safety—gain with all the advantages Monotubes can give you. Write The Union Metal Manufacturing Company, Canton 5, Ohio.

UNION METAL

Monotube Street Lighting Poles

higher-rated lamps increases, more heating problems arise. New street-lighting units that dissipate excess heat without problems would be welcome.

Fewer and Better Brackets

Street-lighting supports have progressed from the ½-inch "gooseneck" type to the modern 1¼-inch pipe bracket. Many designs are available. There are several types of pole plates and of scrolls or braces used in assembling a support. Some scrolls or braces take up too much pole space, and with more and more telephone cables being installed, proper clearances are becoming more difficult to maintain. A stroll through an average line-hardware manufacturing plant quickly convinces one of the numerous designs of many different types still being purchased for street-lighting systems. There is a need for a few basic designs in supports, with good pole plates and scrolls or braces which use a minimum of pole space.

Attempts to produce supports made of aluminum have been fairly successful, but some types vibrate too much and further changes in design are required.

Better Long Mast-Arms

On highway projects, there is a trend to even wider shoulders. Poles must be set at the edge of the shoulder. The installation of street-lighting units requires long mast-arms to obtain maximum light distribution on the new highway. There is a definite need for new designs in this field. Long mast-arms, which do not vibrate too much at the luminaire, and which do not require several feet of pole space, would be most welcome to clear up a problem which is getting more serious each year. We cannot continue to give good street lighting at fair prices if poles of greater height are required merely to obtain room for attaching the lighting unit.

To most of us, the modern ornamental street-lighting system does a good street-lighting job. Much discussion sometimes takes place, however, before all the decisions have been made. What height of standard—25, 28, or 30 feet? When a decision is made to install 30-foot ornamental light standards, it is necessary to obtain new maintenance equipment. Also, first-class linemen may be required to do the maintenance work on 30-foot or higher ornamental standards. In the never-ending trend to greater heights, we must make some kind of compromise for better light distribution, elimination of glare, etc. Why not adopt a light-center height of 28 or 28½ feet?

Streamlined ornamental standards have been available for some time, but older types are available that consist of 50 to 80 parts. Much labor is required in assembling them. Additional labor in wiring is required on some of the types which support two luminaires. The two supports extend within the tube of the standard too far, with the result that one cable interferes with the other. New design should eliminate this trouble.

The most serious problem confronting us today, in our desire to extend ornamental lighting systems, is the ever-increasing cost of each job. This is due, in part, to the higher excavation costs and higher cost of ornamental standards. A shipment of standards to your construction yard will average over 30 cents a pound. An automobile delivered to your backyard will average between 50 cents and 60 cents a pound. It is not meant to imply that the cost of ornamental lighting standards is out of line, but to illustrate the cost problem.

As we are vitally interested in giving good street lighting at reasonable cost, it is essential that we make every effort to keep these costs as low as possible. Some trends in this direction are already evident, such as the use of overhead wire instead of underground cable, and more and more specially treated wood poles for installation on less-traveled streets and in residential areas.

Where it is necessary to install underground cable, it may be possible to bury cable directly in the earth. Cable without metallic wrapping is being installed with a ground wire buried in the same trench. Much cable of this type is being manufactured, and most of us would like to get all the available information as to expected performances.

Many types of insulation are now available for the internal wiring of ornamental lighting standards. These newer types are reasonable in price and the wiring is easily installed and spliced.

Circuit Control

In the field of street-lighting circuit control, we all welcome the definite trend to standardization of photocell control mountings. No doubt, eventually all mountings will be the same, regardless of the amperes carried by the control circuit. A mechanically actuated delay-relay should be used with most photocell controls in the energizing of a series of street-light systems. During a failure of the power supply, a few seconds are needed for the tubes in the control unit to warm up. As a result, when power is restored—regardless of time of day—the series circuit is energized for a few seconds unless the delay-relay is used. This is an added safety precaution.

With labor cost increasing, we should all give careful consideration to the use of packaged units, consisting of street-lighting transformer, controllers, protectors, and their associated equipment.

With the extension of high-intensity street lighting with lamps of 10,000 or more lumens, especially in overhead areas, the problem of providing sufficient transformer capacity and still keeping open-circuit voltages at normal values is becoming more and more serious.

One solution is to convert to more 20-ampere circuits. Although 20-ampere street-lighting transformers of large capacity can be readily installed in underground systems or at central stations, the great weight of such transformers makes it most impractical to install them on poles. Because transformers of higher kva rating must necessarily also be greater in weight, the solution of this problem seems almost impossible of fulfillment.

A great deal of initiative has been directed to the development of modern street-lighting equipment. We should use it. A program to replace old equipment always pays off. It pays off in good public relations, in fewer lamp outages, in fewer circuit outages, in reduced maintenance.

To help us in our effort to provide good street lighting, we suggest that some sort of national joint committee be set up to establish preference and use, and coordinate standardization among the various cable committees, luminaire committees, and support committees which would cover the questions of brackets, mast-arms, and ornamental standards. In the interest of good street lighting, cost must be kept as low as consistent with good operating practice. We should always install the most modern equipment available.

(*See page* 145)

7 ADVANTAGES
all in one bracket
No. 23104
1. Graceful simplicity—light weight—low cost.
2. Optional attachment to wood poles with 3 lag screws or crossarm bolt and lag screws.
3. Meets all current strength and design requirements.
4. Design permits maximum elevation of luminaire, threaded or slip-fitter style.
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6. Famous Hubbard Key-Hole feature one man installation.
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FOR WOOD POLES

HUBBARD UPSWEEP LIGHTING BRACKETS

HOT GALVANIZED

This popular member of the Hubbard Upsweep Bracket family meets a real need where wood poles are used and short brackets are adequate. Installation is easily made by one man. A ⅝-inch lag screw is turned into the pole, leaving about one-inch projection under the head. The famous Hubbard Key-Hole feature is incorporated in the upper mounting plate, which is welded to the bracket. The Key-Hole slot is dropped over the projecting lag just back of the head.

Final tightening of the ⅝-inch lag screw is accomplished with a wrench, working clearance for which is provided by the bracket's special design. The two bottom ½-inch lags are inserted, and the attachment is complete and secure. At the user's option greater strength may be obtained by substituting a ⅝-inch crossarm bolt for the ⅝-inch lag screw.

The above bracket is also currently available in Aluminum Alloy. Write for complete details.

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"Hang the Load on Hubbard Hardware!"

New Facts About Street Lighting Fixtures

By A. M. BJONTEGARD
Design Engineer, Lighting Division
General Electric Company
Lynn, Mass.

THE American public has increasingly demanded improved lighting for its streets and highways. Standards have been established for guidance toward this objective, with the Illuminating Engineering Society taking a leading role.

This paper will not attempt to cover the broad field of photometric performance, but will deal with some of the problems brought about through the use of larger lamps in street-lighting luminaires. In Detroit, the average lamp size has increased to more than 8,000 lumens; in Winnipeg, Canada, the average exceeds to 10,000 lumens; other cities at least approach these values. Equipment manufacturers have recognized the problems introduced by thermal conditions owing to the use of large lamps.

Glassware Breakage

Glassware breakage has many causes, including fractures due to temperature. Operating people have had long familiarity with malicious breakage. Low-mounted upright luminaires are filled with globes which are inviting targets —particularly at Halloween! Such globes are made of rather thin blown glass which has low impact resistance. Modern pendant luminaires have globes with thicker sections, made by pressing. Their contours are such that they resist impact, and higher mounting heights make them more a difficult target. Various solutions have been considered in the prevention of malicious breakage. Some communities report marked success through a system of education in the schools, aided by law-enforcing agencies.

Tempered glass, with its high impact strength, has some virtue, but its relatively high cost and the difficulty of obtaining a uniform strain pattern, particularly over refracting prisms, have delayed its adoption. Plastic globes have severe temperature limitations, and so do not yet fill the need where large lamps are used. They do have an application with fluorescent lamps, where they can be formed from sheet stock or extruded to the desired section. Here, temperatures are well within the range of available transparent plastics. Tests made on plastic globes show that they distort even when used with fairly small lamps. This is evidently due to the relatively high absorption of infrared energy emitted by filament lamps. The good impact resistance of plastic globes for luminaires as compared with glass, has not been sufficient to overcome the disadvantages of higher cost, temperature limitations, and lower resistance to abrasion.

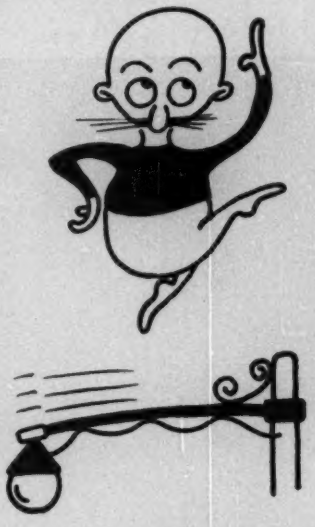
Glass globes will probably continue to be used in future years. Improvements have been made in resistance to both impact and thermal shock, and more improvements will doubtless be made.

A glass globe is subjected to a number of stresses when in service. Temperature gradients exist between the inner and outer surfaces, between the top and bottom portions, and, when internal deflectors are used, between the street and house sides of the globe. Glass expands when heated, but because of unequal temperatures the degree of expansion is not uniform. When the outside of a hot globe is subjected to suddenly applied moisture, the outer surface, already in tension because of lower expansion than the inside, is further cooled with additional tensile stresses set up. A fracture may then occur. This theory also explains the resistance of tempered glass to thermal shock. The surfaces of such glass are in compression at normal temperatures, balanced by tensile forces on the inside. Before a tensile stress can be set up on the outer surface, this compressive force must first be overcome. This means that a higher temperature can be reached before the same tensile stresses are set up on the outer surfaces.

Breakage by Overheating

While this theory may be interesting, what can be done about thermal breakage? Certainly the cleanliness of glassware is a factor. Tests made on a rather dirty globe, which had been neglected in service, showed a temperature drop of 20° C. following cleaning. The light which should have reached the street for a useful purpose was being absorbed by the dirt on the globe, with a sufficient resulting heat to start a crack.

Another frequently overlooked cause of glassware breakage is overheating resulting from a persistent arc within the lamp. When a lamp, operated from a series circuit, fails because of an open circuit, the protective film cut-out will normally puncture and so maintain circuit continuity. In some cases, the arc voltage does not rise to a sufficiently high value to cause puncturing the cut-out dielectric, and an arc may persist



for many hours. This condition is fortunately quite rare, and may be overcome by a change in lamp design and by improved cut-outs. In the meantime, a cold driving rain during the arcing period can cause glassware breakage.

A small amount of moisture dropping on a hot lamp will frequently cause the lamp bulb to shatter. The filament will remain intact for a time, but will evaporate rather quickly, leaving a deposit of tungsten oxide inside the reflector. When the filament does open, portions of it may drop on the enclosing glass globe. Being very hot, this can cause a fracture. The obvious solution is to keep water out of the luminaire.

To reduce glassware breakage, the chemical composition of the glass itself can and has been changed. Boro-silicate glass, with markedly lower expansion, has been introduced in place of lime glass in some instances. Since stresses are set up by unequal expansion because of temperature gradients, reduction of the amount of expansion will also reduce the degree of stress. Tests have verified marked improvements in resistance to thermal shock by this change in glass composition.

The use of spun-sealed construction, where the glass globe and the reflector are factory assembled, has established an excellent record over a period of 15 years. The national average is 2% per year for all causes including malicious breakage, in which the rector is in a condition to be returned to the factory for reconditioning.

Since a very small amount of moisture can cause a lamp failure, precautions must be taken in both design and

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without sacrificing efficiency

California state highway specifications called for: *"high roadway brightness, with* additional shielding *to prevent distracting glare* . . . at a no more than 2% loss in lighting efficiency."

A special shield for the Westinghouse OV-20 mercury-vapor unit minimized glare and showed these results: *less than 2%* loss in efficiency.

With thousands now installed, they have discovered that this is also one of the easiest street lighting systems to maintain. Relamping is a one-hand operation, because of the hinged construction. Routine cleaning is speedy.

What's more, this unit provides lighting distribution patterns for both wide and narrow highways.

It will pay you to investigate the Westinghouse mercury-vapor street lighting systems. Send for B-3876-A, Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pa. J-04300

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installation of luminaires to preclude entrance of moisture. It is common practice among manufacturers to subject their equipment to severe tests in spray booths in which driving rains are simulated with the lamp alternately turned on and off. Such tests have shown the difficulty in completely sealing a luminaire. Allowance must be made for the expansion and contraction of the air within the unit through suitable breathing vents. If vents are not provided, the cooling air within the luminaire will actually create a slightly negative pressure, sufficient to pull a considerable amount of water over the top of the reflector collar of a pendant luminaire where this seats on the hood.

Normally, the luminaire will "breathe" through the mounting bracket. There have been instances where such openings have been sealed by compounds during installation. In other cases, span-wire-mounted luminaires are without normal vents. This has led manufacturers to provide means by which luminaires may breathe. For example, small grooves can be provided in the hood at the point where the reflector seats. Spray-booth tests determined the minimum size of these grooves for the maximum lamp wattage.

A rather common entrance of moisture is at the threaded connection on top-mounted luminaires. Good practice dictates that such pipe threads must be made water-tight during installation. It has frequently been found that compounds have been used which are perfectly satisfactory for certain types of plumbing, but which will not stand the temperatures to which they are subjected when used in street-lighting luminaires. In time, volatile matter is driven off and water will work its way along the threads and into the hood. Cements and sealing compounds have also been applied after the hood has been installed on its bracket, but the adequacy of this is at best rather questionable. Certainly the best practice is to liberally cover the threads with a recommended material before the connection is made. General Electric recommends its #1201 Glyptal for this purpose and other manufacturers undoubtedly have entirely suitable sealing materials.

Interchangeability

The Edison Electric Institute and the National Electrical Manufacturers' Association, through the "EEI-NEMA Joint Committee on Standardization of Street Lighting Equipment" has set up standards which will doubtless be followed to an increasing degree.

With these standards it is possible to interchange certain component parts of luminaires by the several manufacturers with definite and obvious user benefits. There appears to be unanimity of thought from all quarters that reflector assemblies should be such that they can be used on hoods of competitive manufacturers. By reflector assemblies is meant the combination of reflector and enclosing glassware.

There are definite reasons why these should be considered in combination. The photometric performance of enclosed reflectors, as indicated by candlepower distribution, is the result of redirection of light by both reflector and glassware. For instance, one manufacturer may prefer to impart vertical control to emitted light by the reflector only, with the reflector globe providing lateral control exclusively. Such reflector assemblies have been in use for many years.

At a later date, another means was evolved that could provide substantially the same light distribution, with added benefits such as improved shading for adjoining houses. In this case the reflector globe redirects light both laterally and vertically. These two refractor globes are by no means interchangeable with each other. In fact, if this were an actual requirement, such refractors as the "verti-lateral" would not fit the pattern and might not have been developed. The manufacturer should be granted enough flexibility to improve the part through modifications in design and through new concepts. This can be done within the framework of interchangeable reflector assemblies, but is drastically limited by any requirement that the glassware also be interchangeable on the reflectors.

Cable Deterioration

Temperatures within the pendant luminaires are such as to impose severe duty on the cable used. Most frequently, this is evidenced by insulation failure, but there are other aspects as well.

Volatile matter is driven out of certain insulations at high temperatures which adversely affect the proper functioning of other components of the luminaire. Such matter will condense on reflectors and substantially reduce the reflectivity. The glass globe may have its inner surfaces coated so that the light transmission is reduced. In both cases, this further increases the temperature and the insulation deterioration is thereby accelerated. It is also a factor in reduced light output of the luminaire.

Sockets for multiple lamps normally give many years of troublefree service. Recently, a number of these were observed to have almost completely failed after less than two years of operation.

The current-carrying parts made of copper alloys, such as the screw shell, were badly corroded even though they were electroplated. Investigation revealed that sulphur compounds had been driven out of the rubber insulation

of the lead wires. A factory test using the same insulation showed this process to start within a very few days. The unplated lamp bases were affected to even a greater degree than the sockets.

These cases are mentioned to show that insulation failures are a factor in other respects than loss of sufficient dielectric strength. They can also be a factor to be considered in low-voltage applications.

Fluorescent Luminaires

Following the rather general use of fluorescent luminaires abroad, particularly in England, we in this country have determined to study their use for street lighting under our somewhat different conditions.

For this purpose, such luminaires have been manufactured and installed at several locations. It is yet too early to predict how widely this light source will be applied here, but we can briefly review some of the advantages and disadvantages.

The long-light source means that the luminaires must be substantial in size. They, therefore, will require something more than conventional light-bracket mounting. While they can be made light in weight, they do offer wind resistance. Their size also means inherently higher cost than luminaires used with filament or mercury lamps. This same factor must be considered in cleaning and maintaining the equipment.

While light output can be maintained fairly constant over a wide range of temperatures, the added complication of so doing may not be worth the added equipment needed. It appears more likely that users will accept reduced light output at low temperatures. The long-light source also means that the utilization, or the amount of the generated light reaching the street, will be fairly low.

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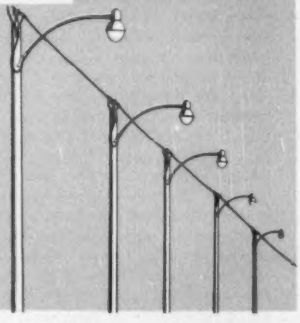
Also, a complete line of Open-Type Luminaires, Pipe Brackets, Mast Arms, Steel and Wood poles, etc.



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recognized that this is an efficient light source with high lumen output per watt. Using several of the lamps available today in a single luminaire, it is possible to deliver a large quantity of light to the roadway. The long life of these lamps is in their favor.

It is the quality of that light which offers the greatest benefit toward improved comfort in seeing. The low brightness means low veiling glare. With luminaires mounted transverse to the roadway, the long source provides a wide path of light, which is particularly advantageous with wet pavements.

The factors mentioned, along with others of less importance, will determine the acceptance of fluorescent street lighting in this country.

We are now at the mid-century, and if we look back to the days of arc lamps certain comparisons can be drawn. Using as our measuring stick the amount of street lighting obtained per dollar, the progress becomes significant.

For instance, an arc lamp as manufactured 30 years ago was priced at three times that of a present-day luminaire. Because of the devaluation of the dollar, the ratio in price might well be one to six. The amount of light reaching the roadway, which is termed utilization efficiency, was about 13% with an arc lamp at a given ratio of street width to mounting height. A modern luminaire, at the same ratio, would have 45% of its generated light reach the roadway and would be distributed in a manner that would lead to better seeing conditions. Maintenance was also about three times as costly for an arc lamp.

Consult the Cable Manufacturer for Wiring Results

By R. C. GRAHAM
Chief Product Engineer
Rome Cable Corporation
Rome, N. Y.

IT IS claimed that electric street lighting originated in Niagara Falls, N. Y., in 1879, shortly following the first use of an insulated cable for electrical distribution.

Just as in the case of lamps and other street-lighting fixtures, there has been an almost continuous technical and economic improvement in the wiring and cable for street-lighting circuits.

Street lighting is a relatively easy and desirable application for the products of a cable manufacturer. For example, load factors are low, voltages are not extreme, cable dimensions are small and uniform, load cycles are not involved, and so-called hazardous locations are seldom encountered. This means that, for street lighting, the manufacturer may often simplify design and utilize a wider range of materials than can be used where more extreme conditions are encountered. Because of this, the cable manufacturer has been able in the last few years to reduce the cost of his products for street lighting in a considerably greater proportion than is possible for most other forms of electrical distribution.

The cable manufacturer sells his products to all sections of the country and thus encounters every condition and street-lighting practice known. This varied and widespread experience brings knowledge which can be exchanged and utilized in other similar situations. Because of his experience, the cable manufacturer is in a good position to note the trend of various systems and procedures. It is significant that there recently seems to be a definite trend towards multiple lighting systems except where extensive series systems have been already established. Insofar as new series systems are concerned, the trend seems to be towards the 20-ampere circuits.

Cost Is Small Part of Total

Compared to other items of cost in a street-lighting system, the wire and cable requirements are but a small part of the original over-all capital costs and an even smaller proportion of operating costs. An analysis of some recently published data discloses that (excluding labor) wire and cable costs represent the following approximate percentages of total costs for various lighting systems:

Overhead multiple system	4.0%
Overhead series system	5.5
Underground multiple system	10.0
Underground series system	14.0

While these figures may seem small, the cable manufacturer is doing a fair job of even further reducing them, and at the same time increasing cable life so that first cost approaches final cost. These advantages can be obtained only if the operating or design engineer works closely with the cable engineer and is alert to adopt his suggestions concerning the proper cable for the proper job. All too frequently we find that local history or some unusual condition has established a barrier or precedent so that changes or modernization are slow to be accepted.

Let us now consider choices for series lighting circuits—underground as most of these systems are. Not too many years ago, the accepted underground cable designed involved the so-called "parkway" construction, which included rubber insulation, a lead sheath, steel tape armor, and a layer or two of impregnated jute. Such a cable, when properly installed, has provided an almost perfect operating record. However, the need for such a cable is questionable, since first cost is high, and installation, with splicing, terminating, etc., is difficult. A compromise but cheaper design which omitted the armor and jute has also had a good history but has been somewhat limited in use. With the introduction of the underground non-metallic sheathed cable several years ago, we have an almost ideal approach for an underground series lighting cable. Since the war, such a cable design has generally consisted of a high-grade moisture-resistant rubber insulation with an over-all neoprene sheath. In this cable the neoprene sheath provides the necessary mechanical protection as well as a barrier against sunlight and earth chemicals. Since the rubber insulation must provide the electrical insulating value and moisture resistance, it is important that this insulation compound be a good one. Fortunately, such compounds are available today. A combination moisture and heat-resistance grade or a high-grade ozone-resistant insulation can be buried directly in the ground, is simple to splice and terminate, and has an excellent operating history. This is also the cable construction which has been

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348-A

LINE MATERIAL . . . Street Lighting

approved and recommended by Civil Aeronautics Administration for all underground wiring of airports.

Newer types of non-metallic sheathed under-ground series-lighting cables involve thermoplastic insulations. The first, and an especially popular type in the Far West, utilizes a wall polyvinyl chloride thermoplastic insulation with no further covering and is described by Insulated Power Cable Engineers Association specifications. It has a good record, is simple to use, and is limited to a maximum voltage of 5,000. The second, and a popular one in the East, utilizes a reduced wall of polyethylene insulation and frequently a thin sheath of polyvinyl chloride for added physical protection. This latter cable design has the highest dielectric strength, lowest dielectric losses, the greatest degree of moisture resistance, and the best cold resistance of any non-metallic cable construction. Dimensions, specifications, and handling procedures for these thermoplastic insulated cables may be found in manufacturers' data sheets or catalogs. These thermoplastic types become even more attractive when it is realized that their cost is as much as 50% lower than other underground cables.

Bare Wire for Low Cost

Another series wiring system that is becoming acceptable is the application of single-wire, overhead construction wherein a single bare wire (local ordinances permitting) is strung from insulated pole top to insulated pole top and thus lost to the eye for all practical purposes. Obviously, this practice costs only a fraction of underground installation—chiefly because of reduced labor. Its use so far has been confined to downtown areas where it would be impractical to tear up pavement to go underground.

Before leaving the subject of series wiring we might consider the subject of conductor size. Generally speaking, a conductor no smaller than #8 AWG. is used on a series circuit, principally for mechanical reasons, and is more than able to carry a 6.6 or even 20 ampere load. By using a straight series circuit of 20 amperes, the secondary voltage is just one-third as high as that of a 6.6-ampere circuit. This means that a lower-rated-voltage cable can be used, with subsequent cost savings. For example, a 30-kw regulator with 20-ampere secondary has an open secondary voltage of 2,020 volts; whereas a 30-kw regulator with 6.6-ampere secondary has an open secondary voltage of 6,130 volts. In the case of the 20-ampere secondary, 3,000-volt-rated cable could be used; whereas the 6.6-ampere circuit would require 7,000-volt-rated cable, possibly with shielding.

Mast-arm or ornamental pole-and-bracket cable has long presented serious design problems. This two-conductor cable is used in series lighting service for the interior wiring of ornamental poles which are fed by underground cable or for the exterior wiring of pole-type bracket fixtures. Such poles and brackets usually require a cable less than an inch in diameter and flexible enough to permit installation with minimum bending radii. The cable is rated for 600 volts between conductors and from 4,001 to 12,000 volts to ground. The conventional construction for this service utilizes rubber-insulated and braided conductors laid parallel with an over-all belt of high-voltage rubber insulation—usually of the ozone-resistant variety. A protective braid or neoprene sheath is applied over this flat assembly. This design will resist bending in an edgewise direction. Some users who desire maximum flexibility specify a twisted-part construction, wherein each conductor utilizes flexible stranding fully insulated for the voltage to ground with the appropriate wall thickness of ozone-resistant compound individually jacketed with neoprene. A newer development, which is considerably less costly and features reduced diameters, incorporates parallel conductors individually insulated for 600 volts with a thermoplastic compound, together with an over-all belt of suitable thickness of polyethylene to provide the required high-voltage protection to ground. No further coverings are used. When required, these coverings may be supplied as flame-resistant.

Multiple-Circuit Wiring

Let us now review multiple wiring materials which involve lower voltages and generally overhead construction. Bare or weatherproof open wiring between poles has been the most common method employed. As you may know, weatherproof wire has been modernized lately with a covering of either neoprene or polyethylene in place of the conventional impregnated fabric coverings. These newer coverings possess a high degree of weather-resistance and can never festoon and form unsightly "streamers." Thus, these new weatherproof wires would improve the old-age appearance of the conventional open wiring. Many users, chiefly in the interests of appearance, have adopted a low-cost overhead *cable* for multiple wiring. One design consists of "duplex" of flat-thin insulated conductors shaped like a figure 8, with either a single covering of insulating neoprene or thermoplastic such as polyvinyl chloride or polyethylene. This cable is low in cost and simple to install. The same cable is often used also for wiring from the pole top to the luminaire fixture at the end of the bracket.

Another overhead cable design used for multiple wiring, especially where pole spans exceed 100 feet or where weather is known to cause undue loading, consists of a neoprene-insulated power conductor twisted around a self-supporting bare neutral messenger. One, two, or even three pilot wires can be twisted with the power conductor around the messenger to present a compact, neat-looking cable. Further data, together with case histories concerning either of these overhead cables for multiple wiring, can be obtained from the manufacturer.

To Prevent Sulphur Reaction

The previous speaker has mentioned an unusual problem wherein certain rubber insulations, operated at high ambient temperatures, seem to liberate sulphur compounds by volatilization which rapidly corrode the metallic current-carrying parts of the fixture and coat the inner surfaces of the glass globe so that light transmission is reduced. It is suggested that one solution would be to eliminate moisture, since it is doubtful that corrosion would occur without its presence. Another idea would be to tin-plate the current-carrying parts, since the copper conductors next to the rubber insulation are tin-coated to prevent sulphur reaction. Where the problem continues, the obvious solution is to use a cable that is not insulated with rubber, and the thermoplastic types already described should be suitable.

These and other problems are continually being presented, but unless the cable manufacturer is consulted he is unable to offer a solution. We are all interested in lower costs and improved efficiencies. It is only by the exchange of ideas, and co-operative efforts that these objectives can be obtained. You may be assured that the cable manufacturer is ready and anxious to do his part, since he realizes that the system must be reliable and he is interested only in supplying what is best. After all, there is nothing more visible than a dark street.

In September Issue

THESE three papers will be discussed by recognized authorities connected with the Westinghouse Electric Corporation, Line Material Manufacturing Company, The Union Metal Manufacturing Company, Habirshaw Cable and Wire Division, Anaconda Wire and Cable Company, and The Rochester Gas and Electric Corporation. Immediately following there will be a summing up of the discussions by Mr. Gaffney, Mr. Bjontegard, and Mr. Graham.

Pointe Aux Peaux Station
Architects:
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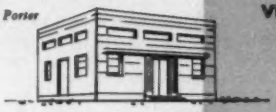

VERTICAL CONSTRUCTION is the key to economy in Monroe's new low lift pumping station

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Important savings on space and construction costs are achieved by the City of Monroe, Michigan, through a new pumping station built on three levels. Motors and controls are on the ground level, discharge piping on the first sub-level, and impellers in the sump level. This station features Byron Jackson Type DWT Vertical Circulating Pumps designed to operate singly or in combination. Installation proved simple and economical because no dry pit was required as would be the case with horizontal units.

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Zoning and Planning Notes

Edited by NORMAN WILLIAMS, JR.

Tourist Court Not a Nuisance in a Residential Area

PENNSYLVANIA. *Manger* v. *Pass*, 80 Atlantic (2d) 702 (Supreme Court, May 12, 1951).

Although the City of Harrisburg finally adopted a zoning ordinance last fall, the Pennsylvania courts continue to be busy with cases arising before its passage. This decision involved a tourist court, with sleeping and parking accommodations for 25, which was proposed for a site near the northern city line on Front Street, a heavily traveled multi-lane highway along the Susquehanna River. The frontage near by was developed with one-family residences, including some very expensive ones, although there were some non-residential establishments further to the east. When neighbors challenged the issuance of a building permit, the Pennsylvania Court held that a tourist court was not a nuisance per se in a residential area, by a divided vote of 5 to 2.

The majority of the Court, although raising a question on this point, decided to consider the neighborhood as a residential area for the purposes of this case. While recognizing that a tourist court might disturb the peace of a residential area, a majority of the Court held that it would be possible to run such an establishment in such a way as to be unobjectionable, and that, therefore, the establishment could not be enjoined in advance as a nuisance. In so doing, the Court followed general practice in the law of nuisance, which tends to regard as a nuisance per se only such establishments as slaughter houses, glue factories, etc.

The dissenting judges argued that disturbances at night are inherent in the operation of a tourist court, and that a tourist court should, therefore, be recognized as a nuisance in a residential area. The opinion also stated—as if it were a different point—that property values would also be reduced in the area.

The two opinions contained excellent statements on the development of tourist courts and on their objectionable aspects. On the former, the majority opinion said:

> It is a matter of judicial knowledge that the advent and extensive development of automobile travel in the United States has tremendously changed and affected the habits of automobile travelers. It necessitated the building and maintaining of arterial super and multi-lane highways which have interlaced the entire country. Large cities, and even smaller ones, are now being by-passed by motorists in order to avoid the delay and congestion of city traffic. In consequence there have been erected and developed, in large numbers, along the highways, automobile tourist courts, inns, camps, or motels to accommodate such transient automobile travelers. No longer are motorists required to enter a city in order to secure hotel accommodations. In many instances automobile courts, inns, camps, and motels provide equal, if not superior accommodations than are supplied by many first-class urban hotels. Certainly they constitute a tremendous convenience to automobile travelers.

On the latter, the dissenting judge wrote:

> I am firmly of opinion that operation of a tourist court in a strictly residential area does constitute a nuisance per se. The purpose is to rent rooms by night to transients. There will be parking of cars in the evening and at night during the time residents of the area are entitled to the greatest degree of quiet and privacy. The principal business of a tourist court is not transacted during what are commonly known as "business hours" of the day. Guests will leave on errands and return. There will be the intermittent annoying glare of headlights with each arrival and departure. Bright lights necessary to attract transients will remain lighted until 11:30 p.m., and safety lighting will continue through the night. If vacancies exist, motorists will be received without regard to the particular hour. Departures will undoubtedly occur in the early hours of the morning. There will be the starting of motors and the banging of doors and trunks. There will be a certain amount of loud talking and calling among patrons of the tourist court.

Spot Zoning—Light Manufacturing District Near Residences

NEW JERSEY. *Campbell* v. *Borough of Hillsdale*, 79 Atlantic (2d) 321 (Appellate Division, March 7, 1951).

The proprietor of a chicken farm, located in an open agricultural area, wanted to put a candy factory on the premises. After various attempts to get permission were unsuccessful, the Borough Authorities sent letters to all registered voters requesting their opinion on the proposed factory—with a statement suggesting that the proposal would be "poor planning" and had been disapproved by the local planning board and board of adjustment, and that a restriction to residential development would not result in too high taxes. Of the 1,300 who answered, 1,100 approved the proposal. Thereupon the borough authorities established a new "Limited Commercial and Light Manufacturing District," which permitted all the uses previously permitted in Residence Districts, plus only one in addition—"the manufacture, storage, packing, and sale of candy at wholesale." The district was mapped only in the one-acre tract in question. The Court invalidated the amendment on the grounds that it constituted arbitrary discrimination in favor of one lot, was not part of a comprehensive zoning plan, and was not in keeping with the character of the neighborhood.

While his case does represent an attempt at spot zoning which was both inept and rather too bald, the New York courts have upheld a somewhat analogous provision in the New York City zoning resolution which was phrased to encourage the development of a variety of unobjectionable non-residential establishments in low-density residential areas. *Nappi* v. *La Guardia*, 84 N. Y. Misc. 775 (1944). Affirmed without opinion, 269 N. Y. Appellate Division 694 and 295 N. Y. 652.

Separate Front-Yard Ordinance Upheld

MINNESOTA. *McCavic* v. *De Luce*, 46 North Western (2d) 873 (Supreme Court, March 16, 1951).

Although the City of Virginia, Minn., has no zoning ordinance, a separate ordinance required a 15-foot front yard (setback) for all future construction. A concrete-block bakery was built with only a 7-foot front yard, in conscious violation of the ordinance and the building permit, between two residences in a mixed residential and commercial block where several other buildings of both kinds did not conform to the front-yard provision. The neighbors brought an action for a mandatory injunction to require removal of the protruding section of the building.

In the opinion the Court held that the grant of authority in the City Charter "to establish a building line for any residence, avenue, or street, and to prevent the erection of buildings in front of such lines" authorized setback lines for commercial as well as residential buildings, and that the setback ordinance could be put into effect apart from the general zoning ordinance. (No reference was made to *Gorieb* v. *Fox*, 274 U. S. 603, where the United States Supreme Court decided the same questions in 1927.)

Multiple Dwelling in One-Family Area

PENNSYLVANIA. In re *501 Paxinosa Ave., Easton*, 80 Atlantic (2d) 789 (Supreme Court, May 21, 1951).

In this case, a large house on a lot 100 by 130 feet was occupied by three apartments (plus servants' quarters) before adoption of the local zoning ordinance, which restricted the area first to one- and two-family, and then to one-family dwellings. Shortly after the original zoning, the owner divided the apartment on the first floor in two by partitioning, thus creating four apartments in the dwelling. On application by the owners, the Court held that they were entitled to a certificate of occupancy stating that the premises were an existing non-conforming use for four families.

In the opinion, the Court referred to a lot of precedent stating that the law could not stop the "natural expansion" of a non-conforming use, and cited the case of a non-conforming hotel where the proprietors might want to increase the number of rooms. While subdivision of an apartment within an old house would do no great harm, such language should not be regarded as controlling in any instance where there are specific statutory provisions regulating the expansion of non-conforming uses.

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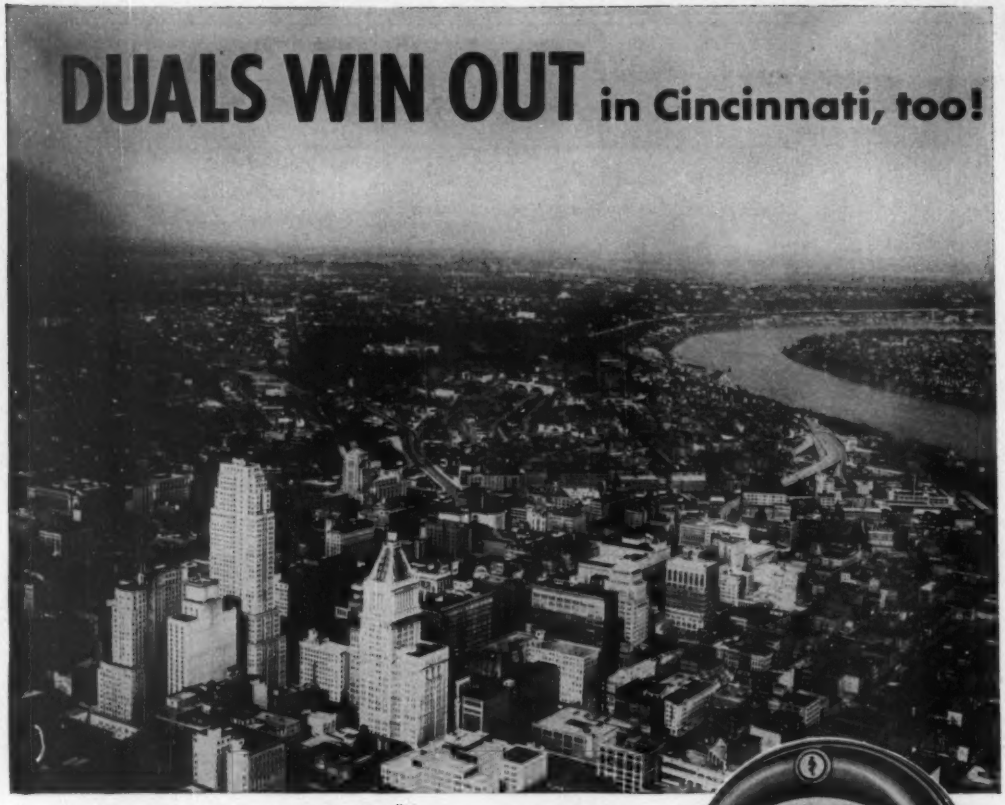

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Legal Notes and Decisions

Prepared by NATIONAL INSTITUTE OF MUNICIPAL LAW OFFICERS
Charles S. Rhyne, General Counsel

Annexation—Reasonableness Of Ordinance

In suit by plaintiffs to set aside ordinance adopted by city commission annexing area where plaintiffs lived, held that ordinance was adopted as provided by state statute and plaintiffs had no right to attack ordinance as emergency measure but could only question reasonableness of ordinance, and evidence established that ordinance was reasonable. *Breland et al.* v. *City of Bogalusa*, 51 So. (2d) 342 (La. App., Mar. 15, 1951).

Assessments—Ornamental Street Lights

In action against city to restrain city from levying special assessment or paying out any general funds of city for installation of ornamental street lights and related equipment on business street in city, held that such assessment was within constitutional provision allowing assessments for local improvements by chartered city. *Logan* v. *City of Glendale*, 229 Pac. (2d) 128 (Cal. App., Mar. 19, 1951). *Reh. den.* April 5, 1951.

Charities—Authority of City of Third Class to Act as Charitable Trustee

Where heirs at law of deceased sued city in equity alleging failure of testamentary trust and asked for distribution of trust fund among heirs of deceased, held that will had general charitable intent subject to cy pres doctrine and city of third class had authority to erect, establish, and regulate operation of city hospital, acting as charitable trustee for hospital purposes. *Ramsey* v. *City of Brookfield et al.*, 237 S. W. (2d) 143 (Mo., Feb. 12, 1951). *Reh. den.* Mar. 12, 1951.

City Employees—Leave with Pay For City Police Officers

In assumpsit action to recover complete salary for services rendered as police officer and statute allowed full-time police officers one day of rest in eight with pay, held that although plaintiff was appointed police officer and not elected officer, evidence established plaintiff's duties for town as "full-time police officer" and without terms of statute allowing such officer one day of rest in eight without loss of pay. *Dubia* v. *Tilton*, 79 Atl. (2d) 346 (N. H., Mar. 6, 1951). *Reh. den.* Apr. 3, 1951.

City Employees—Right of Police Commissioner to Dismiss Employee—Upheld

In action to have police commissioner's dismissal of complainant reviewed, held that evidence supported commissioner's action in dismissing complainant from Police Department of Nassau County due to his intoxication. *Gilroy* v. *Beckmann*, 103 N. Y. S. (2d) 33 (N. Y. App., 2nd Div., Mar. 12, 1951).

City Employees—Salary Claims—Interest from Day Employee Signed Payroll Under Protest

In action against city to recover certain unpaid portions of salaries and interest from date of signing payroll under protest, held that since liability for back wages of employees was established and real dispute arose as to which time claims would draw interest, signing of payroll under protest by employee was sufficient demand for payment to start running of interest on unpaid claims. *Brunner et al.* v. *City of New York*, 103 N. Y. S. (2d) 382 (N. Y. Sup Ct., N. Y. Co., Mar. 12, 1951).

Contracts—Relieving Contractor of Obligation to Construct Certain Buildings Without Charge

Where holders of municipal recreational bonds and general and utility taxpayers in City of Fort Lauderdale brought action against defendant to invalidate agreement between city and contractor, held that original contract between contractor and city could not be impaired or modified in order to relieve contractor of obligation to construct certain buildings, unless there was an advertisement and competitive bidding. *Universal Const. Co. et al.* v. *Gore et al.*, 51 So. (2d) 429 (Fla., Dec. 8, 1950). *Reh. den.* April 7, 1951.

Ditch—Injuries Caused to Motorcycle Rider Running Into

Where motorcycle driver and passenger brought suit against city for injuries incurred when their motorcycle was catapulted into ditch at end of highway lane, and there was no warning of termination of such lane and presence of ditch, held that evidence was sufficient to establish actionable negligence of city and verdict for plaintiff allowed. *Marcario et al.* v. *City of New York*, 103 N. Y. S. (2d) 205 (N. Y. Sup. Ct., App. Div., Mar. 19, 1951).

Flood Control — City Liable to Landowners for Damages from Project

Where city initiated proceedings for protection from flood waters under state flood-control act and under terms of this act acquired certain land and easements by condemnation proceedings, and landowners challenged amount of damages awarded them, held that in such proceedings all damages contemplated by and set forth in flood-control act should be awarded to landowners. *Yoder et al.* v. *City of Hutchinson*, *Giles* v. *City of Hutchinson*, *Braden* v. *City of Hutchinson*, 228 Pac. (2d) 918 (Kans., Mar. 20, 1951).

Excise Tax—Business of Protecting Customers' Premises with Alarm Signal System

In action against city to recover utility excise tax paid by plaintiff protective company in business of protecting customers' premises against burglary by elaborate signal system connected by wires to plaintiff's central offices, held that since company answered alarms over wires by sending guards to investigate it was engaged in "sale of telegraphic service" and subject to utility excise tax imposed on such sales by city. *Holmes Electric Protective Co.* v. *City of New York et al.*, 103 N. Y. S. (2d) 307 (N. Y. Sup. Ct., N. Y. Co., Mar 1, 1951).

Fires—Failing to Extinguish Fire Outside City Limits—City Not Liable

Where plaintiff resided outside corporate limits and paid city reasonable annual fee for fire services and now seeks to recover for fire loss sustained due to alleged negligence of fire department in not extinguishing blaze that destroyed his house, held that although annual fee was paid for fire services, operation of fire department was still governmental function and not ministerial one, and city is not liable for negligence of its officers and employees when acting in governmental function. *Banks* v. *City of Albany*, 64 S. E. (2d) 93 (Ga. App., Mar. 2, 1951). *Reh. den.* Mar. 16, 1951.

Licenses—Imposition of Excessive Fees for Poles in Street

In action by city against defendants for accounting of amounts due plaintiff under licensing ordinance regulating condition, location, and construction of poles, wires, and mains in streets and public places of city, held that since permit fees were excessive and unreasonable, invalidity of such provisions rendered entire ordinance void and case was properly dismissed. *City of Chicago Heights* v. *Public Service Co. of Northern Illinois*, *City of Chicago Heights* v. *Illinois Bell Tel. Co.*, 97 N. E. (2d) 807 (Ill., Mar. 2, 1951).

Lotteries—Expert Testimony by Police Officer Admissible

In prosecution of appellant for violating city anti-lottery ordinance, held that expert testimony by police officer that writings, pads, books, etc., exhibited to him were generally used in operation of lotteries and was admissible evidence. *White* v. *City of Birmingham*, 51 So. (2d) 271 (Ala. App., Mar. 13, 1951).

Milk Permit—Suit to Require Issuance Of Permit for Sale of Milk Products In City

In suit against city for mandatory injunction to compel issuance of permit to plaintiff for sale of milk and milk products, held that since evidence established company's milk products were of sufficient high grade to entitle it to permit for sale of milk in city, plaintiff was entitled to mandatory injunction requiring city to issue permit. *City of El Paso et al.* v. *Russell Glen Distributing Co., Inc.*, 237 S. W. (2d) 181 (Tex. App., Oct. 11, 1950). *Reh den.* Nov. 22, 1950.

Paupers—Grandfather's Estate Liable To City for Funds Expended for Support of Grandchildren

Where Commissioner of Welfare of city filed claim against decedent's estate for reimbursement of funds paid out as public assistance for grandchildren during life of decedent and for costs of administering, held that evidence established that decedent was worth at least $18,000 and received annual income of $1,000 during time city supported grandchildren, and his estate would be liable for cost of public assistance but not proportionate cost of administration. *Commissioner of Welfare of City of New York* v. *Smith et al.*, *In re Abele's Estate*, *In re Smith et al.*, 103 N. Y. S. (2d) 151 (N. Y. Sup. Ct., App. Div., Mar. 12, 1951).

Torts—Failure to Warn of Dredging And Deepening of Bay at Public Bathing Beach

In action by administrator of deceased against town to recover damages by reason of death of deceased by drowning at public bathing beach maintained by town, held that since town maintained beach and dredged bay as deep as 11 feet without erecting warning signs and made no effort to employ lifeguard, even though beach was intended for use by children, and deceased fourteen-year-old girl stepped into dredged area while wading and was drowned, town was guilty of negligently maintaining bathing beach. *Casani* v. *Town of Islip*, 103 N. Y. S. (2d) 435 (N. Y. Sup. Ct., App. Div., Mar. 26, 1951).

Trees—City Liable for Damage Caused by Falling

In action against city for damages caused when tree adjacent to city street fell upon plaintiff's car injuring his daughter and wrecking car, held that evidence established that tree was in decayed condition and its presence constituted hazard to persons on street, and condition existed for such time that city in exercise of ordinary care should have discovered condition of tree and removed it. *City of Bainbridge* v. *Cox*, 64 S. W. (2d) 192 (Ga. App., Mar. 8, 1951).

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Because Park-O-Meter is the only truly modern meter which gives unfailingly dependable service throughout the changing years. Requires only a minute to set for any time or coin combination, or to convert from conventional reset to cumulative time operation. Furthermore, Park-O-Meter gives public acceptance because of simple, one-coin, automatic operation, the visual trouble signal, and the Coin-gate Baffle which prevents coin insertion when the meter is not in working condition.

the **ONE METER** *which meets* **EVERY** *operation need*

Parking meter operation needs vary within cities and change with time and experience. This meter . . . is readily convertible to these changing conditions . . . now and later.

Write for complete information

Tomorrow's Street

(*Continued from page 93*)

Some debris might be carried to the center of the street, but most of the street sweepings would be at the sides of the road, where they have been blown by passing traffic.

The street-sweeping problem, therefore, would not be affected, and it would mean that debris would not block the drainage as it does now.

The inverted crown has many advantages over the conventional crown, and it should be considered by the designer for use on residential streets where underground storm water drains are available:

1. The cost of road construction would be reduced because of the simplified drainage system.

2. The maintenance cost of catch-basin clearance after each snow storm would be eliminated.

3. On streets of minimum gradient, road deterioration caused by water which has been ponded by the blockage of gutters by ice and snow would be greatly minimized.

Ohio State University Gives Sanitary-Engineering Curriculum

A NEW curriculum in sanitary engineering has been approved and will be initiated in the fall of 1951 at Ohio State University. The course has been developed as one of the options in civil engineering and will lead to a Bachelor of Civil Engineering or a combined Bachelor of Civil Engineering and a Master of Science degree on completion of five years of study. The courses will not differ from other civil-engineering studies until the third year, when bacteriology, quantitative chemical analysis, and environmental sanitation will be the required courses not listed in the other options. The students will also take a six-weeks summer training course with the Ohio Department of Health between the third and fourth years. The fourth and fifth years of training also will embrace studies pertinent to sanitary engineering.

The course will be under the general direction of Kenneth W. Cosens, Associate Professor in the Department of Civil Engineering.

The Challenge

Nature said: "You cannot."
Man replied: "I can."
From shore to shore, above the tides,
He built a gleaming span.

Nature said: "You dare not."
Man replied: "I dare."
He launched his winged ship aloft
And boldly sailed the air.

Nature said: "You shall not."
Man replied: "I will."
He caged the thunderbolts of Jove
And made them serve his skill.

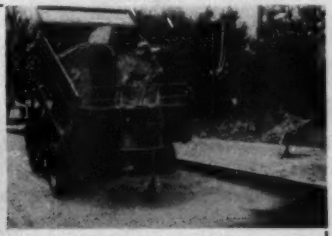
Nature said: "You must not."
Man replied: "I must."
He split the atom. Now he holds
A godlike power in trust.

—D. B. STEINMAN

Dr. Steinman, New York City consulting engineer and bridge authority, has designed great bridges, in use in many parts of the world, which have met Nature's challenge of rivers, deep gorges, and like obstacles.

Model R HI-WAY SPREADER

Ideal for applying seal coat on newly laid oil . . . You save time and material whenever and wherever you operate this Spreader.



Model DD Sand & Cinder Spreader spreading chips for seal coating

For low-cost ice control also use the Model DD . . . Use it in the summer, spreading calcium chloride for dust control, sand and other material for seal coat work.

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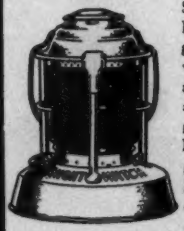

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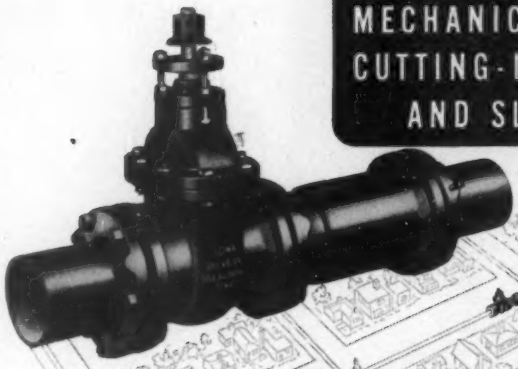

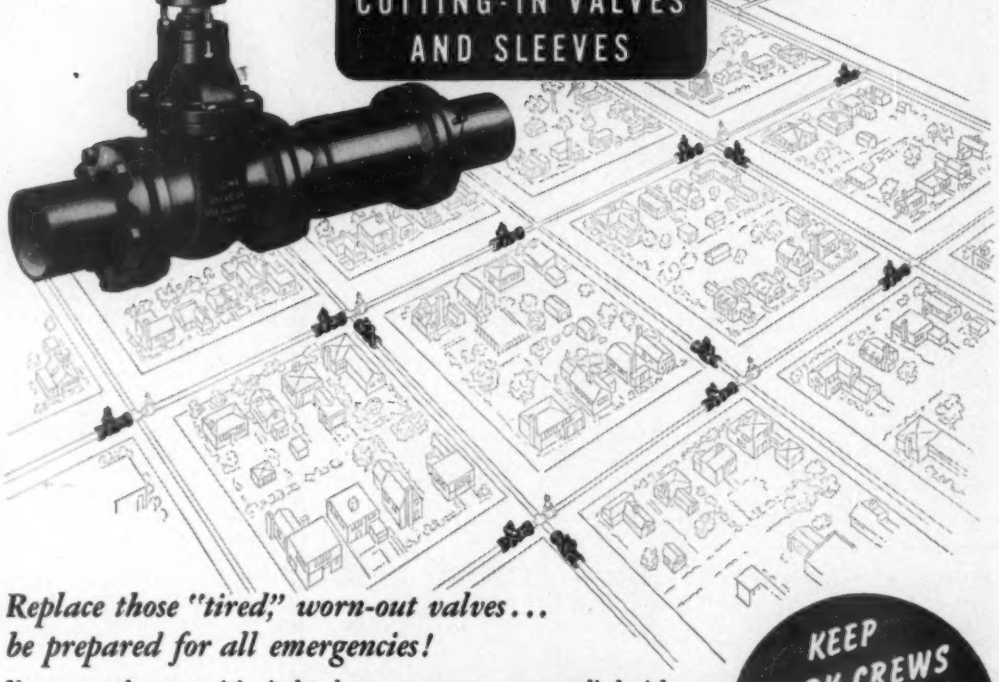

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Now, more than ever, it's vital to keep your customers supplied with water and fire protection at all times . . . Replace worn-out valves and add needed valves with IOWA Mechanical Joint Cutting-In Valves and Sleeves . . . It's the fastest, simplest and most economical method of cutting gate valves into existing water lines . . . Furnished complete with joint accessories . . . No lead, no jute, no caulking . . . Just a ratchet wrench . . . Ideal as auxiliary valves for fire hydrants . . . Simplifies hydrant inspection and maintenance . . . Act now before it's too late . . . Write today for descriptive literature!

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Recent City Manager Appointments

The new manager of Eagle Lake, Maine, is EDDIE BELANGER, who replaces GILBERT E. MICHAUD.

MRS. EDITH B. BLAKE, formerly town clerk, treasurer, and secretary to previous town managers, has been appointed town manager of Norridgewock, Maine. She succeeds LINWOOD A. PORTER.

CHELSIE SENERCHIA has been succeeded by A. D. F. BLOODWORTH as manager of Miami, Fla. Mr. Bloodworth twice before acted as temporary manager of Miami.

A former selectman of Boothbay Harbor, Maine, has been chosen as the town's new manager to succeed MERLE F. GOFF. The new manager is RALPH A. BOYD.

LEON CARVER, formerly manager of Chandler, Okla., has been appointed as the new manager of Burkburnett, Texas. He succeeds P. A. WIGGINS.

E. ROYDEN COLTER will move from St. John, N. B., Canada, on September 1 to become the first manager of Sarnia, Ont., Canada.

The first manager of Chanute, Kans., is DALE A. DAHLGREN, a former manager of Lindsay, Okla.

Fairview, Okla., has appointed its first manager. He is JOHN DAVIDSON, formerly city engineer for Cushing, Okla.

The new manager of Kalamazoo, Mich., is CLARENCE H. ELLIOTT, formerly manager of Jackson, Mich. He succeeds B. LEROY GILBERT.

JAMES L. GALLOWAY has moved from Glenwood Springs, Colo., to take HERBERT FRITZ's place as manager of Marshall, Mo.

The former recorder-treasurer of Roseburg, Ore., W. A. GILCHRIST, is now the city's manager, succeeding M. W. SLANKARD.

Brunswick, Maine, chose MERLE F. GOFF, former manager of Boothbay Harbor, Maine, as its new manager to succeed JOHN J. DESMOND.

Winston-Salem, N. C., has appointed JOHN GOLD, director of the North Carolina Prison System and formerly the city's chief of police, as its new city manager to succeed C. E. PERKINS.

The first manager of Martinsburg, Pa., is F. B. HIGGINS.

LELAND L. HILL, assistant manager under HERMAN G. CROW, was appointed shortly after Mr. Crow's death in June to be the new city manager of St. Joseph, Mich.

JOE HORNER, a former insurance agent in Belleville, Kans., is the city's new manager, succeeding W. I. LANE.

WARREN C. HYDE, manager of Albert Lea, Minn., will move to Janesville, Wis., to fill the manager position there that was vacated when HENRY TRAXLER retired in May.

THEODORE R. BARTLETT has been replaced by STANLEY E. JOHNSON as manager of Patten, Maine. Mr. Johnson was chairman of the board of assessors of Mt. Chase, Maine.

H. J. MACCOTTER, who was manager of Jacksonville Beach, Fla., in 1948-50, is again acting as the city's manager since MRS. CLARE G. SWANSON resigned in June.

Bowdoinham, Maine, has appointed BERT D. MERRILL as its first manager.

Waurika, Okla., has chosen JOE E. PARRIS, a recent public administration graduate from Oklahoma A & M, as its first manager.

PERRY C. PEINE, former administrative assistant to the manager of Kansas City, has succeeded to the city managership of Abilene, Kans., vacated by FRANK LAWLER.

ROBERT L. PLUMMER, city clerk, has succeeded WILLIAM N. HUNTER as manager of Wheeling, W. Va. Mr. Plummer previously acted as the city's manager in 1941-46.

Carey, Ohio, chose THEODORE E. RIDLEY, former manager of Slater, Mo., as its new manager to succeed HARRY HALE.

Iowa City, Iowa, has appointed its first city manager. He is PETER F. ROAN, former manager of Mexico, Mo.

Cedar City, Utah, chose an instructor in the political science department of the University of Utah as its first city manager. He is THOMAS W. THORSEN.

LEIGH WEBBER, who has been serving as executive secretary of the Maine Municipal Association, has returned to the municipal management field. He is now manager of Chelsea, Maine, succeeding FRANCIS G. LILLIE.

D. G. WEIFORD, assistant to the manager of Norfolk, Va., has been appointed city manager of South Boston, Va. He fills the position vacated when W. E. LAWSON, JR., was recalled to active duty with the Army several months ago.

The first manager of Lawrence, Kans., is J. H. WIGGLESWORTH, former manager of Russell, Kans.

Waco, Texas, has appointed the City Attorney, D. M. WILSON, as acting city manager for a period of six months.

CLARENCE E. RIDLEY
Director
International City Managers' Association

Louisville Study Points Up Cost of Slums to City

SLUMS are the most costly portion of cities in terms of city services as well as in human decay.

This fact is clearly pointed up by a recent investigation by Louisville's Housing Commission and the county's Planning and Zoning Commission, according to the National Association of Housing Officials. The survey covered two areas in the same section of Louisville. One section was considered as standard; the other, "substandard." On every count—sickness, crime, fire, juvenile delinquency, divorce, desertion, relief cost—the substandard area came off second best.

The standard area had 15,804 residents, while in the substandard area there were 17,234. Housing in the substandard area was considerably below par, containing 79 residential blocks, of which 68% were classified as slums and 5% as acceptable. By comparison, the standard area has 84 residential blocks, of which only 3.5% were graded as slums.

Here's how the two areas compared in costs to the city:

Considerably more policing was required in the substandard area, with policemen arresting 2,174 people there as compared with 823 arrests in the standard area. Gambling arrests totaled 257 compared with 133 in the standard area.

Police-patrol cars made nearly 2,050 runs to the substandard area in the first four months of 1949 as compared with 1,090 to the standard area. Then, too, there were nearly twice as many ambulance runs.

The substandard area also sent many more people to criminal court—274 as compared with 94 from the standard area. Juvenile delinquency flourished in the substandard area, with this area sending 268 persons to juvenile courts, while only 73 appeared from the standard area.

Fire protection was considerably more costly in the slum area—chiefly as a result of the age of the buildings in the area. There were 146 dwelling fires in the substandard area compared with 100 in the other section.

Greatest difference in the cost of the areas showed up in welfare assistance. The city's bureau of social services, with 94 families from the slum area on its rolls, spent $43,138 in 1950 as compared with $3,126 for six families in the standard area. Then, too, the death rate from tuberculosis in the substandard area was double that in the standard area. Visiting public health nurses called on 2,624 patients at home in the substandard area compared with 664 in the standard neighborhood. There were also more divorces and more cases of desertion and non-support among heads of families in the substandard area.

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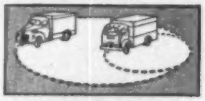

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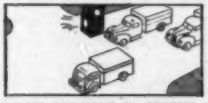

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Conventions — When and Where

Conventions listed this month for the first time are indicated by an asterisk (*)

Aug. 14-17—Grand Rapids, Mich.
INTERNATIONAL ASSOCIATION OF FIRE CHIEFS. Annual Convention (Pantlind Hotel). Gen. Mgr., James E. Jagger, 22 E. 38th St., New York, N. Y.

Aug. 20-22—State College, Pa.
PENNSYLVANIA WATER WORKS OPERATORS' ASSOCIATION. Annual Convention (Temporary Union Bldg.). Sec.-Treas., R. Rupert Kounts, School of Engineering, State College, Pa.

***Aug. 20-22—Toronto, Ont.**
CANADIAN INSTITUTE ON SEWAGE AND SANITATION. Annual Meeting (Royal York Hotel). Sec.-Treas., Dr. A. E. Berry, Parliament Bldg., Toronto, Ont.

Aug. 22-24—State College, Pa.
PENNSYLVANIA SEWAGE AND INDUSTRIAL WASTES ASSOCIATION. Annual Conference (Pennsylvania State College). Sec.-Treas., Bernard S. Bash, Kirby Health Center, Wilkes-Barre, Pa.

Aug. 27-30—Washington, D. C.
ILLUMINATING ENGINEERING SOCIETY. National Technical Conference (Hotel Shoreham). Exec. Sec., A. D. Hinckley, 1860 Broadway, New York 23, N. Y.

Aug. 27-31—Cincinnati, Ohio
NATIONAL SHADE TREE CONFERENCE. Annual Convention (Netherland-Plaza Hotel). Sec.-Treas., L. C. Chadwick, Ohio State College, Columbus, Ohio.

***Aug. 29-30—Zion Nat. Park, Utah**
MUNICIPAL WATER WORKS AND SANITATION CONFERENCE jointly with the MUNICIPAL PLANNING AND ZONING CONFERENCE. Annual Meeting (Zion Lodge). Sec.-Treas., Mrs. Lyla Ray, Newhouse Hotel, Salt Lake City 1, Utah.

***Aug. 30-Sept. 1—Cedar City, Utah**
UTAH MUNICIPAL LEAGUE. Annual Convention. Sec.-Treas., Mrs. Lyla Ray, Newhouse Hotel, Salt Lake City 1, Utah.

Aug. 30-Sept. 1—Mackinac I., Mich.
MICHIGAN MUNICIPAL LEAGUE. Annual Convention (Grand Hotel). Dir., John H. Huss, 205 S. State St., Ann Arbor, Mich.

Sept. 5-6—Milwaukee, Wis.
WISCONSIN CHIEFS OF POLICE ASSOCIATION. Annual Convention (Schroeder Hotel). Sec., Walter H. Haynes, Chief of Police, Sheboygan, Wis.

Sept. 5-7—Washington, D. C.
GOVERNMENTAL RESEARCH ASSOCIATION. Annual Convention (Hotel Statler). Sec., Louis D. Brown, 30 Rockefeller Plaza, New York 20, N. Y.

Sept. 9-11—Fargo, N. D.
LEAGUE OF NORTH DAKOTA MUNICIPALITIES. Annual Convention (Hotel Gardiner). Exec. Sec., Myron H. Atkinson, Bismarck, N. D.

Sept. 9-13—Poland Spring, Maine
INTERNATIONAL CITY MANAGERS' ASSOCIATION. Annual Conference. Dir., Clarence E. Ridley, 1313 E. 60th St., Chicago, Ill.

Sept. 10-12—Boston, Mass.
NEW ENGLAND WATER WORKS ASSOCIATION. Annual Convention (Hotel Statler). Sec., Joseph C. Knox, 73 Tremont St., Boston 8, Mass.

Sept. 10-12—Pocono Manor, Pa.
PENNSYLVANIA MUNICIPAL AUTHORITIES ASSOCIATION. Annual Conference (Pocono Manor Inn). Sec., Charles F. LeeDecker, 103 Sparks Bldg., State College, Pa.

Sept. 11-13—Marshalltown, Iowa
IOWA SEWAGE WORKS ASSOCIATION. Annual Meeting (Hotel Tallcorn). Sec.-Treas., Leo Holtkamp, P. O. Box 310, Webster City, Iowa.

Sept. 12-14—Minneapolis, Minn.
AMERICAN WATER WORKS ASSOCIATION—Minnesota Section. Annual Conference (Hotel Nicollet). Sec.-Treas., Leonard N. Thompson, 216 Court House Bldg., St. Paul 2, Minn.

***Sept. 13-14—Detroit, Mich.**
AIR POLLUTION AND SMOKE PREVENTION ASSOCIATION OF AMERICA—East-Central Section. Program Chairman, J. W. Shaw, Detroit Smoke Abatement Bureau, 112 E. Jefferson, Detroit 26, Mich.

Sept. 13-14—Whiteface, N. Y.
AMERICAN WATER WORKS ASSOCIATION—New York Section. Fall Meeting (Whiteface Inn). Sec.-Treas., R. K. Blanchard, 50 W. 50th St., New York 20, N. Y.

Sept. 13-15—Johnstown, Pa.
LEAGUE OF CITIES OF THE THIRD CLASS IN PENNSYLVANIA Annual Convention. Postponed until further notice.

Sept. 13-15—Saranac Inn, N. Y.
COUNTY OFFICERS' ASSOCIATION OF NEW YORK STATE. Annual Convention (Saranac Inn). Exec. Sec., Donald C. Scribner, County Bldg., Johnstown, N. Y.

Sept. 13-15—Wilkes Barre, Pa.
PENNSYLVANIA STATE ASSOCIATION OF COUNTY COMMISSIONERS. Annual Convention (Sterling Hotel). Sec.-Treas., Herbert S. Bolger, Court House, Holidaysburg, Pa.

Sept. 16-18—Roanoke, Va.
LEAGUE OF VIRGINIA MUNICIPALITIES. Annual Convention (Hotel Roanoke). Exec. Sec., Harold I. Baumes, 905 Travelers Bldg., Richmond 19, Va.

Sept. 16-19—Detroit, Mich.
AMERICAN PUBLIC WORKS ASSOCIATION. Annual Convention (Veterans Memorial Bldg.). Exec. Dir., D. F. Herrick, 1313 E. 60th St., Chicago 37, Ill.

Sept. 17-19—Louisville, Ky.
AMERICAN WATER WORKS ASSOCIATION—Kentucky-Tennessee Section. Annual Meeting (Louisville Kentucky Hotel). Sec., R. P. Farrell, State Dept. of Public Health, 420 Sixth Ave. N., Nashville, Tenn.

Sept. 17-19—Topeka, Kans.
LEAGUE OF KANSAS MUNICIPALITIES. Annual Convention (Municipal Auditorium). Exec. Dir., John G. Stutz, 512 Capitol Federal Bldg., Topeka, Kans.

Sept. 17-20—San Francisco, Calif.
INTERNATIONAL MUNICIPAL SIGNAL ASSOCIATION. Annual Meeting (Mark Hopkins Hotel). Sec., Irvin Shulsinger, 11 W. 42nd St., New York 18, N. Y.

Sept. 18-20—Norfolk, Nebr.
LEAGUE OF NEBRASKA MUNICIPALITIES. Annual Convention (Hotel Madison). Exec. Sec.-Treas., C. E. Beals, 407 Continental Bldg., Lincoln, Nebr.

Sept. 19-21—St. Joseph, Mich.
AMERICAN WATER WORKS ASSOCIATION—Michigan Section. Annual Convention (Whitcomb Hotel). Exec. Sec., T. L. Vander Velde, Dept. of Health, Lansing 4, Mich.

Sept. 19-21—Philadelphia, Pa.
AMERICAN WATER WORKS ASSOCIATION—Pennsylvania Section. Annual Meeting (Bellevue-Stratford Hotel). Sec., L. S. Morgan, State Dept. of Health, Greensburg, Pa.

Sept. 20-21—Milwaukee, Wis.
LEAGUE OF WISCONSIN MUNICIPALITIES. Annual Convention (Hotel Schroeder). Exec. Sec., Frederick N. MacMillin, 30 E. Johnson St., Madison 3, Wis.

Sept. 19-21—Yankton, S. D.
SOUTH DAKOTA WATER AND SEWAGE WORKS CONFERENCE. Annual Convention (Charles Gurney Hotel). Sec.-Treas., Charles E. Carl, State Dept. of Health, Pierre, S. D.

Sept. 23-26—New York, N. Y.
AMERICAN CHAMBER OF COMMERCE EXECUTIVES. Annual Conference (Hotel Commodore). Exec. Sec.-Treas., Miss Elizabeth Glenn, 1615 H St., NW., Washington, D. C.

Sept. 24-25—Denver, Colo.
AMERICAN WATER WORKS ASSOCIATION—Rocky Mountain Section. Annual Convention (Cosmopolitan Hotel). Exec. Sec., George J. Turre, Board of Water, Denver, Colo.

Sept. 24-26—Biloxi, Miss.
AMERICAN WATER WORKS ASSOCIATION—Alabama-Mississippi Section. Annual Meeting (Buena Vista Hotel). Sec., Charles W. White, State Dept. of Public Health, 537 Dexter Ave., Montgomery 4, Ala.

Sept. 24-27—Los Angeles, Calif.
INSTITUTE OF TRAFFIC ENGINEERS. Annual Convention (Ambassador Hotel). Exec. Sec., Fred W. Hurd, 211 Strathcona Hall, New Haven 11, Conn.

Sept. 25-27—Milwaukee, Wis.
AMERICAN WATER WORKS ASSOCIATION—Wisconsin Section. Annual Meeting (Hotel Pfister). Sec.-Treas., Leon A. Smith, City Hall, Madison 3, Wis.

Sept. 26-27—Gilbertsville, Ky.
KENTUCKY MUNICIPAL LEAGUE. Annual Convention (Kentucky Dam Village State Park). Exec. Sec.-Treas., Carl B. Wachs, University of Kentucky, Lexington, Ky.

Sept. 26-28—Fargo, N. D.
NORTH DAKOTA WATER AND SEWAGE WORKS CONFERENCE. Annual Convention (Hotel Gardner). Exec. Sec., Jerome H. Svore, Chief Sanitary Engineer, Bismarck, N. D.

Sept. 27-28—Toledo, Ohio
AMERICAN WATER WORKS ASSOCIATION—Ohio Section. Annual Meeting (Commodore Perry Hotel). Sec., F. P. Fischer, Wallace & Tiernan Co., 812 Perry Payne Bldg., Cleveland 13, Ohio.

***Sept. 29—Livingston, N. J.**
NEW JERSEY SEWAGE AND INDUSTRIAL WASTES ASSOCIATION. Annual Outing (Doerr's Grove). Sec.-Treas., Michael S. Kachorsky, P. O. Box 766, Manville, N. J.

Sept. 30-Oct. 2—St. Joseph, Mo.
AMERICAN WATER WORKS ASSOCIATION—Missouri Section. Annual Convention (Hotel Robidoux). Sec., Warren A. Kramer, Division of Health, State Office Bldg., Jefferson City, Mo.

Oct. 1-4—Cincinnati, Ohio
AMERICAN TRANSIT ASSOCIATION. Annual Convention (Netherland Plaza Hotel). Gen. Sec., Arthur W. Baker, 292 Madison Ave., New York 17, N. Y.

Oct. 1-5—Boston, Mass.
NATIONAL RECREATION CONGRESS. Annual Convention (Hotel Statler). Sec., T. E. Rivers, 315 Fourth Ave., New York, N. Y.

Oct. 3-5—Watertown, S. D.
SOUTH DAKOTA MUNICIPAL LEAGUE. Annual Convention. Sec., R. D. Falk, Law Bldg., University of South Dakota, Vermillion, S. D.

Oct. 7-9—Peoria, Ill.
ILLINOIS MUNICIPAL LEAGUE. Annual Convention (Hotel Pere Marquette). Exec. Dir., A. L. Sargent, 537 S. 4th St., Peoria, Ill.

Oct. 7-11—Detroit, Mich.
CIVIL SERVICE ASSEMBLY. Annual Convention (Hotel Statler). Dir., Kenneth O. Warner, 1313 E. 60th St., Chicago 37, Ill.

(*Continued on page 163*)

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Conventions—When and Where

(*Continued from page* 161)

Oct. 8-11—St. Paul, Minn.
FEDERATION OF SEWAGE AND INDUSTRIAL WASTES ASSOCIATIONS. Annual Meeting (Municipal Auditorium). Exec. Sec., W. H. Wisely, 325 Illinois Bldg., Champaign, Ill.

Oct. 8-11—St. Louis, Mo.
NATIONAL ASSOCIATION OF ASSESSING OFFICERS. Annual Convention (Hotel Statler). Exec. Dir., Albert W. Noonan, 1313 E. 60th St., Chicago 37, Ill.

Oct. 8-12—Chicago, Ill.
THIRTY-NINTH NATIONAL SAFETY CONGRESS AND EXPOSITION. Annual Convention (Stevens Hotel). Gen. Sec., R. I. Forney, National Safety Council, 425 N. Michigan Ave., Chicago 11, Ill.

Oct. 9-12—Washington, D. C.
NATIONAL ASSOCIATION OF HOUSING OFFICIALS. Annual Convention (Hotel Statler). Dir., John M. Ducey, 1313 E. 60th St., Chicago 37, Ill.

Oct. 10-11—Des Moines, Iowa
LEAGUE OF IOWA MUNICIPALITIES. Annual Convention (Hotel Fort Des Moines). Exec. Sec.-Treas., Max A. Conrad, Burlington, Iowa.

Oct. 14-17—Fort Worth, Texas
AMERICAN WATER WORKS ASSOCIATION—Southwest Section. Annual Convention (Texas Hotel). Sec.-Treas., Leslie A. Jackson, Robinson Memorial Auditorium, Little Rock, Ark.

Oct. 14-17—Pittsburgh, Pa.
AMERICAN SOCIETY OF PLANNING OFFICIALS. Annual Convention (Hotel William Penn). Exec. Dir., Walter H. Blucher, 1313 E. 60th St., Chicago 37, Ill.

Oct. 14-17—San Francisco, Calif.
LEAGUE OF CALIFORNIA CITIES. Annual Conventios. Exec. Dir., Richard Graves, Hotel Claremont Bldg., Berkeley 5, Calif.

Oct. 15-17—Portland, Ore.
LEAGUE OF OREGON CITIES. Annual Convenvention (Multnomah Hotel). Exec. Sec., Herman Kehrli, Johnson Hall, University of Oregon, Eugene, Ore.

Oct. 15-18—Toronto, Canada
ASSOCIATION OF SCHOOL BUSINESS OFFICIALS. Annual Convention (Hotel Royal York). Sec., H. W. Anderson, 306 E. Lovell St., Kalamazoo, Mich.

***Oct. 16-17—Little Rock, Ark.**
ARKANSAS MUNICIPAL LEAGUE. Annual Convention (Hotel Marion). Exec. Dir., Glenn G. Zimmerman, 401 Main St., N. Little Rock, Ark.

Oct. 18-20—Peoria, Ill.
ILLINOIS ASSOCIATION OF PARK DISTRICTS. Annual Convention (Hotel Jefferson). Exec. Sec., Miss Marjorie Dickinson, 621 E. Capitol St., Springfield, Ill.

Oct. 21-24—Mineral Wells, Texas
LEAGUE OF TEXAS MUNICIPALITIES. Annual Convention (Baker Hotel). Exec. Dir., E. E. McAdams, 108 E. 19th St., Austin 1, Texas.

Oct. 21-24—Washington, D. C.
NATIONAL INSTITUTE OF GOVERNMENTAL PURCHASING. Annual Conference and Exhibit (Shoreham Hotel). Exec. Dir., Albert H. Hall, 730 Jackson Place, NW., Washington 6, D. C.

Oct. 22-24—Pittsburgh, Pa.
ENGINEERS' SOCIETY OF WESTERN PENNSYLVANIA. Annual Water Conference (Hotel William Penn). Sec., W. M. Porter, Engineers' Society of Western Pennsylvania, Hotel William Penn, Pittsburgh 30, Pa.

Oct. 23-26—Atlantic City, N. J.
PENNSYLVANIA'S WATER WORKS ASSOCIATION. Annual Meeting (Claridge Hotel). Pres., John H. Murdoch, Jr., 121 S. Broad St., Philadelphia 7, Pa.

Oct. 23-26—San Francisco, Calif.
AMERICAN WATER WORKS ASSOCIATION—California Section. Annual Convention (Fairmont Hotel). Sec.-Treas., William W. Aultman, P. O. Box 38, La Verne, Calif.

Oct. 24-26—Winston Salem, N. C.
NORTH CAROLINA LEAGUE OF MUNICIPALITIES. Annual Convention (Hotel Robert E. Lee). Exec. Sec., Mrs. Davetta L. Steed, 1009 Raleigh Bldg., Raleigh, N. C.

Oct. 25-27—Dubuque, Iowa
AMERICAN WATER WORKS ASSOCIATION—Iowa Section. Annual Convention (Hotel Julien). Exec. Sec., H. V. Pedersen, Marshalltown Water Works, Marshalltown, Iowa.

Oct. 25-27—Atlantic City, N. J.
AMERICAN WATER WORKS ASSOCIATION—New Jersey Section. Annual Fall Meeting (Hotel Madison). Sec., C. B. Tygert, Box 170, Newark, N. J.

Oct. 28-31—Daytona Beach, Fla.
FLORIDA SEWAGE AND INDUSTRIAL WASTES ASSOCIATION, jointly with the Florida Section of the AMERICAN WATER WORKS ASSOCIATION. Annual Fall Meeting (Princess Issena Hotel). Sec.-Treas., Perry M. Teeple, P. O. Box 210, Jacksonville 1, Fla.

***Oct. 28-30—Kansas City, Kans.**
KANSAS ASSOCIATION OF MUNICIPAL UTILITIES. Annual Convention (Town House). Sec., Edgar P. Schowalter, Board of Public Utilities, Kansas City 6, Kans.

Oct. 28-Nov. 1—Miami, Fla.
INTERNATIONAL ASSOCIATION OF CHIEFS OF POLICE. Annual Convention (McAllister Hotel). Exec. Sec., Edward J. Kelly, 1424 K St., NW., Washington 5, D. C.

Oct. 29-Nov. 2—San Francisco
AMERICAN PUBLIC HEALTH ASSOCIATION. Annual Convention (Civic Auditorium). Exec. Sec., Reginald M. Atwater, M.D., 1790 Broadway, New York 19, N. Y.

***Oct. 30-31—St. Louis, Mo.**
AMERICAN CONCRETE INSTITUTE. Regional Meeting (Sheraton Hotel). Publicity Chairman, Carl Chappell, care of Portland Cement Assn., 915 Olive St., St. Louis 1, Mo.

Oct. 31-Nov. 2—Baltimore, Md.
AMERICAN WATER WORKS ASSOCIATION—Chesapeake Section. Annual Convention (Hotel Belvedere). Sec.-Treas., C. J. Lauter, 6955 33rd St., NW., Washington, D. C.

Nov. 7-9—Roanoke, Va.
AMERICAN WATER WORKS ASSOCIATION—Virginia Section. Annual Convention (Hotel Roanoke). Sec.-Treas., W. H. Shewbridge, State Health Dept., State Office Bldg., Richmond, Va.

Nov. 12-14—Winston-Salem, N. C.
AMERICAN WATER WORKS ASSOCIATION—North Carolina Section—and NORTH CAROLINA SEWAGE AND INDUSTRIAL WASTE ASSOCIATION. Annual Convention (Hotel Robert E. Lee). Sec.-Treas., (AWWA), E. C. Hubbard, State Board of Health, Raleigh, N. C.

Nov. 12-16—Miami, Fla.
AMERICAN INSTITUTE OF PARK EXECUTIVES. Annual Convention (McAllister Hotel). Exec. Sec., Weldon B. Wade, 30 N. LaSalle St., Chicago 2, Ill.

Nov. 18-20—Lafayette, Ind.
INDUSTRIAL RECREATION CONFERENCE. Annual Convention (Purdue University). Information from Industrial Recreation Conference, Technical Extension Division, Purdue University, Lafayette, Ind.

Nov. 25-28—Cincinnati, Ohio
NATIONAL ASSOCIATION OF CIVIC SECRETARIES. Annual Convention (Netherland-Plaza Hotel). Pres., Ronald E. Gregg, 417 Huron St., Toledo 4, Ohio.

Nov. 25-28—Cincinnati, Ohio
NATIONAL MUNICIPAL LEAGUE. Annual Convention (Netherland-Plaza Hotel). Exec. Sec., Alfred Willoughby, 299 Broadway, New York 7, N. Y.

Nov. 26-29—Dallas, Texas
NATIONAL TAX ASSOCIATION. Annual Convention (Hotel Adolphus). Sec., Ronald B. Welch, Box 1799, Sacramento, Calif.

***Dec. 10-12—Washington, D. C.**
AMERICAN MUNICIPAL ASSOCIATION. Annual Convention (Statler Hotel). Exec. Dir., Carl H. Chatters, 1313 E. 60th St., Chicago 37, Ill.

Revenue Bonds Finance Factory Construction

ARMED with a new weapon—the authority to issue revenue bonds to finance construction or acquisition of factory buildings to be leased to manufacturers—Tennessee cities are stalking new industry.

The American Society of Planning Officials reports that one small Tennessee town, Elizabethton, has already bagged big game—a $7,800,000 textile plant—which promises to employ about 1,000 workers. Other cities are expected to follow Elizabethton's lead.

The new Tennessee law, which was enacted this year, permits cities, through revenue-bond financing, to provide factory buildings for lease to new industry. Interest on the bonds, payment of principal, and provisions for maintenance and depreciation are to be provided by rental income from the buildings. The law specifically provides that the bonds may not be redeemed by tax levies and do not constitute any indebtedness on the community. Approval for issuance of the bonds must be given by three-fourths of the voters at a public referendum.

Elizabethton is selling $4,000,000 in revenue bonds as the initial financing of the factory. Rentals from the factory will pay the principal and interest and make up the rest of the $7,800,000 needed for the plant. Under terms of the agreement worked out with the textile firm, the city's plant is to be rented for five years at $1,560,000 annually—enough to amortize it. After that, the company has nine options of five years each, at a rental of $35,000 a year.

Mississippi's success with its "Balance Agriculture with Industry" plan in largely responsible for the interest of cities in the scheme of using revenue bonds to finance industrial plants for lease, the Society observed. In the years since the plan's inception, dozens of industries have been induced to move south and to locate in the smaller communities of the state.

The Mississippi act is administered by the state's agricultural and industrial board, and before any city may sell bonds to finance factory buildings, they must have the approval of this board. Three tests are applied to the cities' proposals: that there are sufficient natural resources readily and economically available for the operation of the enterprise under consideration for at least 10 years; that there is an available labor supply to furnish at least one and one-half workers for each operative job anticipated for the enterprise, and that there are adequate property values and suitable financial conditions so that the total bonded indebtedness of the municipality shall not exceed 25% of the total assessed valuation of all property within the municipality.

We Tore Up The Ad We Intended to Run

And Wrote Another One!

KERRIGAN Lights the Way To a Greater, More Modern Miami!

Early in October pictures were made of a brand new street lighting installation in Miami. The standards had been installed on Miami Beach's beautiful Collins Avenue and were ready to be turned on. It was a job we were proud of; and the advertisement shown above was prepared and made ready to send to the magazines.

THEN MIAMI'S WORST HURRICANE SINCE 1926 STRUCK!

Telephone and electric poles toppled; radio towers fell; huge transformers lay smashed in the street; and there was wreckage everywhere. BUT THE KERRIGAN WELDFORGED STANDARDS STOOD. Tall, tapered, beautiful, and PERPENDICULAR—still ready to light the way when the current could be turned on!

The City Engineers were jubilant and wired their congratulations to KERRIGAN. We were jubilant too, but NOT surprised; for Kerrigan Weldforged Lighting Standards meet the highest engineering standards for highway and street lighting. Write today for your free copy of Catalog AIA. It gives detailed specifications.

Photo of Collins Avenue immediately after the hurricane. In the midst of the wreckage, Kerrigan Standards stand like beacons.

Free

STREET LIGHTING CATALOG

Just send your request (on your letterhead please) to

KERRIGAN IRON WORKS, Inc.
General Sales Office
274 MADISON AVENUE, NEW YORK CITY

Municipal and Civic Publications

Model Ordinance for Civil Defense

MODEL ORDINANCE CREATING AND REGULATING MUNICIPAL CIVIL DEFENSE ORGANIZATION AND OPERATIONS AND MODEL RESOLUTION ESTABLISHING MUNICIPAL CIVIL DEFENSE ORGANIZATION—*Prepared by Charles S. Rhyne. National Institute of Municipal Law Officers, 730 Jackson Place, NW., Washington 6, D. C. Report No. 136. 1951. 42 pp. $2.*

This carefully prepared model ordinance and model resolution should be studied and considered for adoption by every municipality concerned with civil defense. The ordinance is drawn to provide flexibility in civil-defense organizations so that they may have the necessary power to cope with peacetime disasters as well as with those arising because of enemy action.

The model ordinance and model resolution are further premised upon the belief that control in times of emergency should reside with a single individual, such as the mayor, and not a group, such as a city council.

Defense Agencies' Guide

HANDBOOK OF EMERGENCY DEFENSE ACTIVITIES—*Federal Register Division, National Archives and Records Service, General Service Administration. June 1951. 115 pp. For sale by Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. 25 cents.*

This handbook is a guide to federal agencies all or part of whose functions are devoted to mobilization or to other related phases of the defense program. It gives names and addresses of officials of emergency defense agencies, the Department of Defense, and the U. S. Coast Guard, as well as listing names of officials from whom information may be obtained concerning other federal agencies. It also outlines briefly the functions of the various agencies listed. It is designed to assist the public in reaching the services it needs in connection with the defense program.

Second Mobilization Report

MEETING DEFENSE GOALS, A MUST FOR EVERYONE, SECOND QUARTERLY REPORT TO THE PRESIDENT—*By the Director of Defense Mobilization, Charles E. Wilson. July 1, 1951. 48 pp. For sale by Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. 30 cents.*

This is a comprehensive and well-written report which covers not only the defense mobilization situation in the United States, but also progress on building defensive strength throughout the free world. Municipalities may be particularly interested in some of the recommendations set forth. Director Wilson urges, for example, that housing production should be expanded in defense areas. He recommended that "the Government should be authorized to build necessary housing where private enterprise cannot do the job and to assist in the provision of community facilities. How the Controlled Materials Plan works is also clearly explained.

N. J. Plan Report Available for $1

THE New Jersey Department of Conservation and Economic Development, Trenton, N. J., tells THE AMERICAN CITY that the above-mentioned report, listed at $2 on page 157 of the July issue, is now available at $1 per copy.

Examples of Good Site Planning

MYSTERY AND REALITIES OF THE SITE—*By Richard Neutra. Morgan and Morgan, Publishers, High Point Road, Scarsdale, N. Y. 1951. Illus. 64 pp. $3.75.*

Many excellent photos of modern houses and projects which have been well blended with their sites and landscapes, are the primary feature of this book. Emphasis is given to the great importance of careful site planning and landscaping before any project is undertaken.

Inter-Racial Housing—An Experience Report

INTER-RACIAL HOUSING—*By Morton Deutsch and Mary Evans Collins. The University of Minnesota Press, Minneapolis, Minn. 1951. 173 pp. $3.*

This book should be in every housing-authority library. It offers facts which throw new light on an important issue in the over-all problem of racial segregation. Here are the results of a study comparing two kinds of public housing—segregated and non-segregated.

Two low-rent, public-housing projects in which Negroes and whites live as next-door neighbors are compared with two similar housing developments in which Negroes and whites are assigned to separate buildings or areas. The study reveals how the people living in these contrasting ways differ in their social relations, community morale, racial attitudes, and other significant social aspects. The research procedures used are explained, and general conclusions about changing prejudices are offered.

Particularly significant is a postscript by Louis Danzig, Executive Director, Newark (N. J.) Housing Authority, which dramatically documents the research reported in this book by showing how it has helped to bring about a major change in housing policy in the City of Newark.

Canadian Municipal Pension Plans

NATIONAL SURVEY ON MUNICIPAL RETIREMENT AND PENSION PLANS, FINAL REPORT—*Canadian Federation of Mayors and Municipalities, National Office, Mount Royal Hotel, Montreal, Canada. Mimeo. 10 pp.*

This is a report on a Canadian survey of 122 municipalities concerning their present pension and group-insurance arrangements. The report and its recommendations may be of interest to municipal officials in the United States interested in pension plans.

School Buildings as Community Centers

HOW THE SCHOOL BUILDING CAN BE PLANNED TO SERVE OTHER COMMUNITY NEEDS—*Public Education Association, 20 W. 40th St., New York 18, N. Y. June 1951. Mimeo. 12 pp.*

This report recommends that schools be planned to provide double duty, in order to serve both educational and community needs. The report declares: "Whenever possible schools should be planned so that community activities can be concentrated in a wing of the building. These wings should be easily accessible, capable of being sealed off from parts of the building not in use, and equipped so that they can be serviced as separate units. Mechanical thermostatic controls, and reduction in space unnecessarily accessible to the public in after-school hours can reduce custodial costs substantially. . . .

"New schools should be planned with some consideration of already existing community facilities so that duplication of large auditoriums, large stages, etc., is avoided. . . ."

Although primarily concerned with New York City's school-building problems, the general principles in the report are applicable in every community.

Important New Book On Government Administration

GOVERNMENTAL ADMINISTRATION—*By James C. Charlesworth. Harper and Brothers, 49 East 33rd St., New York 16, N. Y. June 1951. 713 pp. $6.*

This is an important new basic textbook in public administration, which should be of interest and value to many municipal officials. The author's purpose is to teach how to administer, rather than to provide merely a descriptive account of existing administrative agencies.

The author brings the book up to date on the development of public administration; the statement of objectives sought in modern administration; analysis of intervention by political parties and pressure groups; description of procedures and production analysis, and on an extended treatment of the actual methods employed by administrators, such as investigation, negotiation, education, visitation, program evaluation, appraisal, adjustment, litigation, etc.

Smoke Prevention Information

AIR POLLUTION AND SMOKE PREVENTION ASSOCIATION, PROCEEDINGS, 43RD ANNUAL CONVENTION, 1950—*John Paul Taylor, Publisher, 520 Pleasant St., St. Joseph, Mich. June 1951. 122 pp. $5.*

More than 25 articles are included in this book, the texts of papers presented by consulting and industrial engineers, smoke inspectors, equipment manufacturers, and others at the 43rd annual convention of the Air Pollution and Smoke Prevention Association, held in Montreal.

The partial list of contents includes "Railroad Smoke Control, Past, Present, Future"; "How Practical Does the Operating Engineer Find Smoke Ordinances?"; "Air Pollution Other Than Smoke"; "Public Relations in Air Pollution Control"; "Meteorological Techniques in Air Pollution Surveys"; "Stack Disposal of Chemical Waste," etc.

Useful Study On American Public Relations

PUBLIC RELATIONS AND AMERICAN DEMOCRACY—*By J. A. R. Pimlott. Princeton University Press, Princeton, N. J. 1951. 265 pp. $4.*

Written by an English author, this book is a penetrating and objective study of public relations in the American scene. Unlike most other published works on public relations, this one includes considerable material on governmental public-relations activities, particularly on the federal level. Although the material is very useful and informative, little attention is given in the book to state and local government public-relations functions.

Questions are raised about the effectiveness and wisdom of particular public-relations activities. The author shows clearly how the public-relations problems of government and private corporations differ.

The book contains numerous enlightening anecdotes and incidents, and is also well annotated with useful references. It should be "must" reading for all interested in or concerned with government public relations.

City Planning Bibliography

A SELECTED BIBLIOGRAPHY ON CITY AND REGIONAL PLANNING—*By Samuel Spielvogel. The Scarecrow Press, 3341 Prospect Ave., NW., Washington 7, D. C. 1951. 276 pp. $5.50.*

Much thought and work have gone into this lengthy bibliography consisting of books and materials which the author, now Director of the New Haven Redevelopment Agency, has selected as being useful in the city and regional planning fields.

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Maintaining Our Highway Industry

ROADS TO NATIONAL SECURITY—*National Highway Users Conference, Inc., 952 National Press Bldg., Washington 4, D. C.* 1951. 32 *pp.* 10 *cents.*

This publication dramatizes the indispensability of highway transportation to the national defense effort and the necessary supporting civilian economy. It recommends a 7-point program of action for avoiding a highway-transportation breakdown during the current emergency. Many of the two-color charts and illustrations will be found adaptable for local use.

Public Service Training Films

DIRECTORY OF PUBLIC SERVICE TRAINING FILMS—*Civil Service Assembly, 1313 E. 60th St., Chicago 37, Ill.* 1951. 20 *pp.* $2.

This directory lists films which have proved most broadly useful to public agencies, and tells where they may be obtained. Subject matter headings include: Clerical, Stenographic, and Secretarial; Fire; Police; Public Health; Public Relations Public Works; Recreation; Safety; Social Work; Supervisory Training, and Transportation.

Elements for Success of Council-Manager Plan

WHAT ARE THE ELEMENTS OF CONTINUED SUCCESSFUL OPERATION FOR THE COUNCIL-MANAGER PLAN OF MUNICIPAL GOVERNMENT?—*By Leonard G. Howell. The Colorado Municipal League, 327 Norlin Library, Boulder, Colo.* 1951. 10 *pp.* 15 *cents. Quantity Discounts.*

A concise pamphlet, based on a speech by Leonard G. Howell, City Manager of Des Moines, Iowa, and President of the International City Managers' Association. Mr. Howell points out that, in common with other forms of government, the manager plan is vulnerable to indifference. He urges periodic re-appraisals of their respective functions by both city councils and managers, and also points out the importance of good public-relations and reporting programs.

New Planning Advisory Service Reports

*Three recent research reports prepared by the Planning Advisory Service staff of the American Society of Planning Officials.**

Zoning for Group Housing Developments describes existing and proposed zoning ordinance provisions governing location, lot coverage, and density standards for multiple-unit housing, including requirements for off-street parking and recreation areas, and discusses the flexibility of design in site planning and planned neighborhood developments which are made possible in some of the recent zoning ordinances. The bulletin includes tables comparing density standards and the minimum area to which the zoning provisions apply. Court decisions are also given.

The Journey to Work is one of the most complex problems in planning. This Planning Advisory Service Information Report analyzes some of the existing studies in the field, their purpose, scope, methodology, and conclusions—and their shortcomings. Part II of the report develops an approach to a comprehensive study of the homework relationship, including suggested goals, data required, and methodology and utilizing existing and new techniques of research.

Regulating the Storage, Distribution, and Use of Propane and Butane. Problems resulting from the increased popularity of liquefied petroleum gases are analyzed in the third report. Standards and regulations which have been suggested or are in operation for the control of locational and hazard aspects of propane and butane installations are discussed.

*Planning Advisory Service research reports are available only to subscribers for the Service. For further information, write to the American Society of Planning Officials, 1313 East 60th St., Chicago 37, Ill.

ASPO Yearbook, 1950

PLANNING, 1950, PROCEEDINGS OF THE ANNUAL NATIONAL PLANNING CONFERENCE HELD IN LOS ANGELES, August 13-16, 1950—*American Society of Planning Officials, 1313 E. 60th St., Chicago 37, Ill. 256 pp.* $10.

Reports and papers presented during a lively and excellent conference held in Los Angeles in 1950, are included in this yearbook of the American Society of Planning Officials.

The keynote speech by Richard L. Neuberger focuses attention on the continuing exhaustion of the nation's basic resources and on the need for reapportionment in most state legislatures. This is followed by informative discussions on Urban Redevelopment; New Techniques in Planning; Water Supply; Action for Cities (in such fields as advance planning of public works, expressways, city-county cooperation, annexation, central business districts, industrial development); Zoning Problems; Planning in the Americas; the Planning Function in Government, and Public Relations in Planning.

Prefabricated-Housing Study

THE PREFABRICATION OF HOUSES—*By Burnham Kelly. Published jointly by the Technology Press and John Wiley and Sons, Inc., 440 Fourth Ave., New York 16, N. Y.* 1951. *Illus.* 466 *pp.* $7.50.

This book covers the history and financing of most of the companies active in the prefabrication field during 1946-47. It describes the entire operating pattern of these companies—management, research and development work, procurement of materials, processing and fabrication of materials, and distribution and marketing of the finished product.

A well-edited, well-written, and comprehensive piece of work, this thorough study of prefabrication has many implications for the rest of the building industry. Moreover, it will answer many questions posed by local officials about the future possibilities of prefabrication, and its impact on local community growth and development.

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TO STOP MAKING RESOLUTIONS

We all know the fellow who talks a wonderful game—then gets up to bat and strikes out. New Year's resolutions are something like that—lots of talk, but little performance. That's especially true of resolutions that we Americans don't even think to make—like being full-time citizens.

For instance, election arguments start at the drop of a hat, and the oratory goes on and on. But at the last national election about half of us took our politics out in talk—45 million didn't bother to vote.

And jury duty. As a source of conversation trials are wonderful. We read the newspaper accounts, discuss them at great length—and explode with indignation when the verdict doesn't please. Then comes a call to jury service and too many of us turn out to be the worst kind of duty dodgers. Or take Union—or School—or Stockholders' Meetings—we're willing to enjoy the benefits but haven't time to participate.

Maybe we don't realize what those things mean to us. The right to vote, to serve on juries, to talk up in meetings—those rights are fundamental to freedom. Without them we are no longer free men. We folks of today didn't have to work for those rights—we inherited freedom from our forefathers. But never forget—they won our freedom at a cost of untold sacrifice—in fortunes, homes, and their very lives.

So don't let's risk losing our freedom. Let's get out and vote. Let's take time to join civic organizations—and speak our minds. Let's serve on juries gladly. In short, let's stop just making resolutions—let's get out and *work* as full-time citizens!

EVERY HOME should have this guide to the Rights and Duties of an American.

Do you know your rights? Do you know the nine keys to good citizenship . . . the how and why of each? You'll find all this useful information and many other interesting facts about your country in this handy little booklet. Send 25¢ to the American Heritage Foundation, 17 East 45th Street, New York City.

Are you a full-time citizen? Check Here!

You're working for Freedom if you can answer "yes" to the questions below.

☐ Do you find out election issues? Attend local political gatherings? Hear *both* sides? Ask questions? KNOW the issues?

☐ Do you vote intelligently in all elections? No election is unimportant. Vote in all of them . . . according to your conscience.

☐ Do you serve gladly on juries? If you haven't served before you'll be surprised to find how interesting and important it is.

☐ Do you join local civic groups? Help improve your community's schools? Good education promotes Freedom.

☐ Do you vote in union elections and stockholders' meetings? Take part in the decisions that affect *your* life. Don't let someone else do it!

As a part of the American Heritage Foundation's Program this is contributed in the public interest by

THE AMERICAN CITY

Final Monograph on Washington, D. C. Plan

REGIONAL ASPECTS OF THE COMPREHENSIVE PLAN, A PORTION OF THE COMPREHENSIVE PLAN FOR NATIONAL CAPITAL AND ITS ENVIRONS—*Published by the National Capital Park and Planning Commission, Washington, D. C. Monograph No. 6. June* 1950. 48 *pp.*

The sixth and final report on the comprehensive plan for the national capital and its environs presents the portions of the plan that relate primarily to the metropolitan region as a whole, thus supplementing the first report with detail. It deals with local planning agencies in the region and with proposals for developing a cooperative regional plan; with traffic, economic, and population aspects of the region; land use and zoning; regional parks; highways and transportation facilities, and river and harbor improvement problems. The President's proposal for dispersal of government employment centers as a defense measure, which was made after the publication of this monograph, coincides with the controlling principles on which were based the Commission's plans for the development of the region, according to a statement by the Commission's Acting Chairman, A. E. Demaray, who further recommends government aid in accelerated suburban planning.

Canadian Housing Study

RESIDENTIAL REAL ESTATE IN CANADA—*By O. J. Firestone. University of Toronto Press, Toronto* 5, *Ont.* 1951. 514 *pp.* $5.

This book, sponsored by the Central Mortgage and Housing Corporation, on the economics of Canadian housing, raises and answers questions such as: Has Canada enough homes for her people? Has the Canadian standard of housing risen over the last several generations? Are Canadians doing better than people in the United Kingdom or the United States in this field? Which parts of Canada provide the best housing? What is the difference between housing need and housing demand and how can it be measured? How much do home buyers earn and how much do they borrow? Are landlords making large profits? How much have building costs risen? Where does the money for housing come from? What has the government done to facilitate home building? How about low-income families? Detailed statistics and charts are used to answer these and other questions on the major trends in house building in Canada.

The School Building Consultant

THE WORK OF THE EDUCATIONAL CONSULTANT IN SCHOOL BUILDING PLANNING—*Engelhardt, Engelhardt and Leggett, 59 Park Ave., New York* 16, *N. Y.* 1951. 32 *pp.*

A well-illustrated, two-color brochure which should be of considerable assistance to community leaders and local boards of education in determining a course of procedure on school building programs.

Mount Vernon, N. Y. Parking Program

TRAFFIC AND PARKING PLAN FOR DOWNTOWN MOUNT VERNON—*Prepared for Mayor and Common Council, City of Mount Vernon, N. Y. By Leslie Williams, Traffic Engineer and Safety Department, Automobile Club of New York, 28 E. 78th St., New York* 21, *N. Y. April* 1951. *Mimeo.* 32 *pp. Available from office of Mayor William Hart Hussey.*

This study includes an inventory and analysis of all parking spaces in the central area of Mount Vernon, an assessment of the parking problem and its impact, an estimate of the amount of parking space required to meet present and 1965 demands, carefully selected sites to form a plan of permanent parking facilities, an evaluation of the capacity of the streets adjacent to the proposed parking facilities, and a series of recommendations for achieving and maintaining a balance between parking supply and demand and traffic facilities in downtown Mount Vernon. The recommendations in the report should do much to stabilize and revitalize the central business district of a suburban city.

The report was completed as a joint project of the city and the Automobile Club of New York, which supplied the services of a traffic engineer and city planner.

1950 Planning and Civic Annual

AMERICAN PLANNING AND CIVIC ANNUAL, 1950—*Published by American Planning and Civic Association, 901 Union Trust Bldg., Washington, D. C.* 192 *pp.* $3.

This annual contains the reports of the meeting of the American Planning and Civic Association held in Washington, D. C., May 12-17, 1950, together with reports made at the 30th annual meeting of the National Conference on State Parks, held in Texas, October 5-11, 1950.

Problems in the growth and development of the federal city received major attention at the former meeting. Of general interest to local planners and civic officials are the reports of the session on metropolitan planning, featuring talks by Myres S. McDougal, Arthur C. Comey, and Raymond V. Long. Also of interest are discussions on new towns and subdivisions, including reports on Fresh Meadows, New York, by Otto L. Nelson; Park Forest, by H. Evert Kincaid; No. Kansas City, by Howard T. Fisher; and Low-Cost Housing and Community Development in California, by David D. Bohannon. Other worth-while reports are given by Sherwood Reeder on "The Responsibility of Cities for Slum Clearance and Slum Prevention," and by Hayden B. Johnson on "Citizen Education and Support for Community Improvements."

Metropolitan Planning

METROPOLITAN PLANNING — *Symposium 2 of Council for Planning Action, Room* 7-341, 77 *Massachusetts Ave., Cambridge* 39, *Mass.* 1951. 32 *pp.* 50 *cents.*

The Boston Council for Planning Action has performed a useful public service by bringing together, for the purpose of rethinking the problem of metropolitan planning, nine outstanding critical experts in the field. This booklet is the report of a symposium conducted in 1950, at which participants included: Arthur C. Comey, Charles Abrams, Guy Greer, Jacqueline Tyrwhitt, Frederick J. Adams, John T. Howard, Louis M. Lyons, and Catherine Bauer. Boston provides the focus for the discussions.

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Graphic Standards for Buildings and Facilities

ARCHITECTURAL GRAPHIC STANDARDS—*By Charles George Ramsey and Harold Reeve Sleeper. John Wiley and Sons, Inc., 440 Fourth Ave., New York 16, N. Y. Fourth Edition.* 1951. 614 *pp.* $10.

The purpose of this book is to make available to all who are technically concerned with the design and construction of buildings, all the standard facts and data they need. The material consists of drawings, sketches, details, dimensions, and tables. There are 565 plates of which 366 in this fourth edition are new. Thorough cross-indexing has produced 11,000 references.

In addition to an orderly arrangement of details beginning with the foundation, are sketched the fittings and, to a considerable extent, the appropriate contents of the buildings. For the municipal designer and planner there are, in addition to the comprehensive data on general buildings, materials covering swimming pools, stadiums, playground equipment, garages, and outdoor parking; sewer pipe, septic tanks and cesspools; standard manholes; waterproofing and damp-proofing, and even the dimensions for furniture, apparel, and the normal human figure. It is a reference work for draftsmen and engineers.

Cleveland's Human Needs

METROPOLITAN CLEVELAND'S HUMAN NEEDS—*Health and Welfare Needs Committee, Welfare Federation of Cleveland. April* 1951. 109 *pp.*

This is a major comprehensive analysis of the health and welfare needs of a large American metropolitan area. It is based on five-year estimates by 134 health and welfare organizations. A representative committee of civic-minded citizens, headed by Ernest J. Bohn, produced the report and recommendations. The findings should be of great usefulness in coordinating and improving the administration of public and private agencies currently handling human-need problems.

San Francisco Bay Port Study

REPORT OF THE SENATE FACT-FINDING COMMITTEE ON SAN FRANCISCO BAY PORTS, Part I.—*Published by the Senate of the State of California, Sacramento. April* 1951. 108 *pp.*

A comprehensive report on the Bay Area ports, analyzing management, financial and operating records, and problems and progress. Major attention is given to the need for trade development, public relations, and port promotion. The Senate committee, whose executive secretary is Frank E. Feliz, recommends that legislation be introduced for the establishment of an area-wide agency—the scope, organization, and plan of which shall be determined by an interim San Francisco Bay Ports Commission. A recommended bill and legislative approach and timetable are also given.

Pros and Cons on Tax Exemption For Privately-Built Civic Center

CIVIC TAX EXEMPTIONS—THE EDMONTON CIVIC CENTER PLAN—*By Robert M. Clark. Article in* The Appraisal Journal, *April* 1951 *issue. Published quarterly by the American Institute of Real Estate Appraisers, 22 W. Monroe St., Chicago 3, Ill. 12-page article. Single copies of entire issue,* $1.75.

This is an excellent case discussion of what happened in Edmonton, Alberta, Canada, capital of the province and current center of an oil boom, when a proposal was made by private interests to build and operate a civic center and extensive commercial buildings. The private interests made a request for tax concessions as a prerequisite to undertaking the project. The proposal was ultimately defeated because only 60.8% of qualified voters, not the necessary two-thirds, approved the plan in a plebescite.

The author concludes that no absolute principle can be laid down in condemnation of all municipal-tax concessions to business, but historical experience, as well as good business sense, strongly suggests that in general such tax concessions should be avoided.

New Handbook on Parliamentary Procedure

STANDARD CODE OF PARLIAMENTARY PROCEDURE—*By Alice F. Sturgis. McGraw-Hill Book Co., Inc., 330 W. 42nd St., New York 18, N. Y.* 1951. 268 *pp.* $2.50.

This is a handbook of parliamentary procedure that is completely modern, comprehensive, authoritative, and easy to use. In the most simple and logical manner it presents the rules of modern parliamentary law applicable to organizations, clubs, civic groups, and governing bodies. An impressive advisory committee and numerous other well-known persons assisted the author.

Part I discusses principles of procedure and general rules; Part II explains how to set up a new organization, how to write its constitution, by-laws, and standing rules; and Part III is a detailed reference guide to motions. Altogether is should suit all needs of groups using parliamentary procedure.

Planning and Housing Reports

CHICAGO, ILL.—Facts About Chicago's Low-Rent Public Housing. Chicago Housing Authority, 608 S. Dearborn St., Chicago 5, 1951. Illus. Tables. 33 pp.

CLEVELAND, OHIO—The General Plan of Cleveland. Prepared by the City Planning Commission. Dec. 1950. Illus. Tables. Maps. 47 pp.

COLORADO SPRINGS, COLO.—Why a New Zoning Ordinance? City Planning Commission. Dec. 1950. Mimeo. Charts. 11 pp.

——Zoning Ordinance of the City of Colorado Springs. City Planning Commission. Charts. 64 pp.

MARYLAND—A Program for the Moncacy Watershed. Maryland State Planning Commission, 100 Equitable Bldg., Baltimore 2. Pub. No. 70. June 1951. Mimeo. Illus. Tables. Maps. 66 pp. 50 cents.

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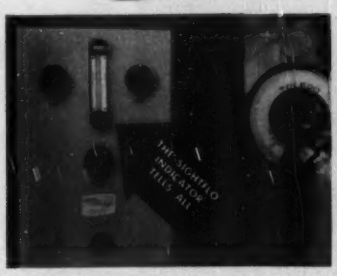

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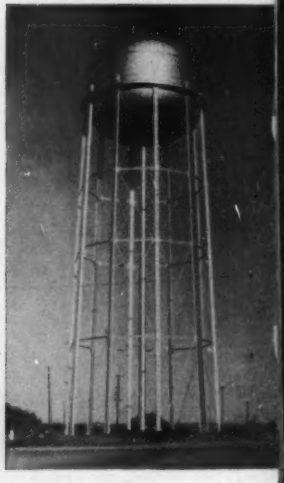

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NEW YORK—Housing Legislation in New York State in the 1951 Legislative Session. A Summary prepared by Charlotte E. Abbott for the Committee on Housing, Community Service Society, 105 E. 22nd St., New York 10. Mimeo. 62 pp.

PHILADELPHIA, PA.—A Guide to Housing in Philadelphia for Health and Welfare Workers. Philadelphia Housing Assn., 1717 Sansom St., Philadelphia. May 1951. 24 pp.

——Annual Report for 1950. Redevelopment Authority of the City of Philadelphia, Board of Education Bldg., Philadelphia 3. Illus. 48 pp.

PHILIPPINE ISLANDS—Subdivision Regulations of the Capital City. Capital City Planning Commission, Manila, P. I. 1950. 11 pp.

PROVIDENCE, R. I.—Rebuilding Providence. Providence Redevelopment Agency, 1950 Annual Report. Mimeo. 11 pp.

ST. LOUIS, MO.—A Plan to Improve Neighborhoods. Prepared jointly by the Division of Health, the Division of Building and Inspection, and the City Plan Commission. Unpaged.

SPERRY, OKLA.—Sperry Memorial Park. Plan and Design of a Recreation Area for Sperry, Okla. Tulsa County Planning Commission, 1212 S. Frisco, Tulsa, Okla. Feb. 1951. Mimeo. Diagrams. 15 pp.

SULLIVAN COUNTY, TENN.—Uniform Subdivision Regulations, Sullivan County, Tenn. Upper East Tennessee Office of the Tennessee State Planning Commission, Municipal Bldg., Johnson City, Tenn. June 1951. Maps. 16 pp.

TEXAS—Roster of City Officials of Texas, 1951-52. League of Texas Municipalities, 108 E. 19th St., Austin 1. June 1951. Bulletin No. 75. 78 pp. $3.50.

UNITED STATES—Hygiene of Housing. *American Journal of Public Health*, Vol. 41, No. 5. Published by the American Public Health Assn., 1790 Broadway, New York, N. Y. May 1951. Pp. 497-515.

——Area and Industrial Development Publications. Business Information Service, U. S. Dept. of Commerce, Washington, D. C. No. 13. April 1951. 13 pp. 15 cents.

——A Report on Salaries in State Planning and Development Agencies. Prepared by the Association of State Planning and Development Agencies, 1313 E. 60th St., Chicago 37, Ill. June 1951. Mimeo. Tables. Charts. Graphs. 8 pp.

——The Price We Pay (For Slums and Discrimination). National Urban League, 1133 Broadway, New York 10, N. Y. 1951. Illus. Graphs. Unpaged.

WATERLOO, IOWA—Tenth Annual Report. A report of the activities of the Waterloo City Plan and Zoning Commission. 1950. Illus. 16 pp.

WINNIPEG, MANITOBA—Annual Report for 1950. Metropolitan Planning Commission, 605 Time Bldg., Winnipeg, Canada. Tables. Maps. 26 pp.

Other Reports Received

AUSTIN, TEXAS—An Ordinance Establishing Retirement and Pensioning System of the City of Austin. Compiled in the Office of the City Attorney. June 5, 1951. Mimeo. 21 pp.

BERGEN CO., N. J.—Fourth Annual Report of the Bergen County Park Commission. 1950. Illus. Unpaged.

BIG STONE GAP, VA.—Fifth Quarterly Progress Report of the Town Council. 1951. Mimeo. Illus. Charts. 15 pp.

CALIFORNIA—Air Pollution Control. 1951 Legislative Problems, No. 7. Bureau of Public Administration, University of California, Berkeley. May 1951. Mimeo. 38 pp. $1.

——The Case for Assembly Bill 3217 and Senate Bill 769, to Eliminate the County Subsidy of Municipal Type Services to Urban Unincorporated Areas. Prepared by the League of California Cities. May 1951. Unpaged.

——Conservation of Forest Resources. 1951 Legislative Problems, No. 9. Bureau of Public Administration, University of California, Berkeley. June 1951. Mimeo. 30 pp. $1.

——Annual Report of the Department of Public Works, City and County of San Francisco for Fiscal Year ending June 30, 1950. Illus. Tables. Charts. 189 pp.

——Financing Local Public Works. 1951 Legislative Problems, No. 8. Bureau of Public Administration, University of California, Berkeley. June 1951. Mimeo. 35 pp. $1.

——Juvenile Traffic Offenders and Court Jurisdiction. Legislative Problems, No. 10. Bu-

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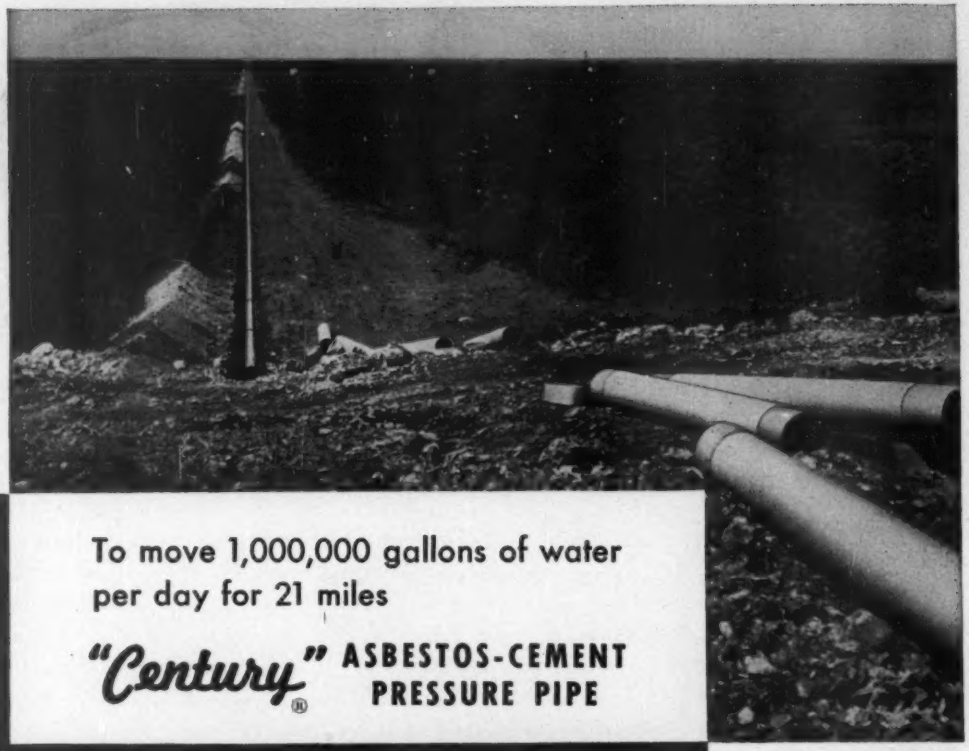

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reau of Public Administration, University of California, Berkeley. June 1951. Mimeo. 36 pp.

CONNECTICUT—Handbook for Connecticut Boards of Finance. Institute of Public Service, University of Connecticut, Storrs, Conn. 36 pp. 25 cents.

DETROIT, MICH.—Meeting the Crisis of Street Transportation in Detroit, Recommended Physical and Administrative Improvements. Mayor's Advisory Traffic Committee. May 1951. 32 pp.

DULUTH, MINN.—Thirtieth Annual Report. Governmental Research Bureau, Inc., 809 Torrey Bldg., Duluth 2. June 1951. Mimeo. 5 pp.

ELMIRA, N. Y.—Elmira Water Board. Thirty-Sixth Annual Report for the Year Ending December 31, 1950. Illus. Tables. 36 pp.

HEARNE, TEXAS—Accomplishments of the City of Hearne, Texas, 1950-1951. Report of the City Manager. Illus. Tables. Unpaged.

IOWA—New Iowa Laws Affecting Local Government, 1951. Prepared jointly by the Institute of Public Affairs of the State University of Iowa, Iowa City, and the League of Iowa Municipalities. 32 pp.

LOUISVILLE, KY.—Annual Report of the Director of Finance for the City of Louisville for the Fiscal Year Ending June 30, 1950. Tables. Charts. Graphs. 72 pp.

LOWER MERION TOWNSHIP, PA.—Annual Report. Board of Township Commissioners, Township Bldg., 75 E. Lancaster Ave., Ardmore, Pa. June 1951. Unpaged.

——Your Municipality. Fifty Years of Local Government, 1900-1950. A Handbook for Residents of Lower Merion Township, Pa. Illus. Graphs. 32 pp.

LYNCHBURG, VA.—Annual Report of the City of Lynchburg, Va., for the Fiscal Year Ending December 31, 1950. Tables. 72 pp.

MISSISSIPPI—Public Reporting for Municipalities. Municipal Study Series No. 12. Bureau of Public Administration, University of Mississippi, University, Miss. 1951. 23 pp.

NEW YORK, N. Y.—Party Organization in New York City. A Report and Proposal for Legislative Action by The Committee on Party Organization of the Citizens Union. Published by the Citizens Union, 41 Park Row, New York 38, N. Y. May 1951. 8 pp.

——Together for Health. An account of cooperative activity during the fourth year of the Health Council of Greater New York, 257 Fourth Ave., New York 10. April 25, 1951. Unpaged.

OHIO—Bacterial-Quality Objectives for the Ohio River. Adopted by the Ohio River Valley Water Sanitation Commission on the basis of findings reported by Harold W. Streeter, Consultant. Ohio River Valley Water Sanitation Commission, 414 Walnut St., Cincinnati 2. June 1, 1951. Tables. Graphs. 26 pp.

RACINE, WIS.—Thirteenth Annual Report for the Sewage Disposal Plant and System for the City of Racine, covering the calendar year 1950. Sewage Disposal Plant and System, 21st St. and Grand Ave., Racine. 1951. Mimeo. Tables. Graphs. 17 pp.

SAN DIEGO, CALIF.—Annual Report of the City Manager for the Fiscal Year July 1, 1949 to June 30, 1950. Centennial Number. Illus.

SYRACUSE, N. Y.—Cases of Effective Governmental Research. Syracuse Governmental Research Bureau, Inc., 351 S. Warren St., Syracuse 2. April 1951.

TENNESSEE—Bid Data on Current Municipal Public Works, Report IV. Municipal Technical Advisory Service, Division of University Extension, University of Tennessee, Knoxville, Tenn. June 1951. Mimeo. 9 pp.

——Federal Grants-in-Aid to the State of Tennessee. Published by Tennessee Taxpayers Assn., Nashville. June 1951. Mimeo. Table. Graphs. 6 pp.

——Trends in Public Finance As They Affect Citizens and Taxpayers in Tennessee. Compiled by Tennessee Taxpayers Assn., 217-222 Chamber of Commerce Bldg., Nashville 3. Research Report No. 83. March 1, 1951. Mimeo. Tables. 21 pp.

TEXAS—Self-Government by Texans. An Elementary Study in Political Science by David S. Switzer and Frank L. Williams. Published by Laidlaw Brothers, Inc., Dallas, 1951. Illus. Charts. Graphs. 96 pp.

UNITED STATES—An Evaluation of Household Food Waste Disposers. American Public Works Assn., 1313 E. 60th St., Chicago 37, Ill. Special Report No. 13, May 1951. Mimeo. 32 pp. $1.

——Fourth Annual City Managers Training School Report. Prepared by the Bureau of Governmental Research, University of Kansas, Lawrence, Kans. Special Report No. 19. June 15, 1951. Mimeo. Charts. 49 pp.

——Civil Defense in Outline. A Study Guide for the National Civil Defense Program. Federal Civil Defense Administration, Washington, D. C. For sale by the Superintendent of Documents, U. S. Gov't Printing Office, Washington 25, D. C. 41 pp. 35 cents.

——Control Centers. Federal Civil Defense Administration, Washington, D. C. April 1951. Illus. Charts. 13 pp.

——Scour Around Bridges. Highway Research Board, Division of Engineering and Industrial Research, National Research Council, Washington 25, D. C. Research Report No. 13-B. April 1951. Illus. 22 pp.

——National Airport Plan. General and Summary Information Concerning the National Airport Plan and the Federal-Aid Airport Program. Superintendent of Documents, U. S. Gov't Printing Office, Washington 25, D. C. 1951. Tables. Charts. Maps. 218 pp. $1.25.

——Pan American Highway. International Road Federation, 550 Washington Bldg., Washington 5, D. C. 1951. Maps. Unpaged.

——Partners in Progress. Summary of a Report to the President by the International Development Advisory Board. The International Development Advisory Board, 13 W. 54th St., New York 19, N. Y. March 1951. Graphs. Maps. 30 pp.

——Public Employment in April. Bureau of the Census, Dept. of Commerce, Washington 25, D. C. July 1951. 4 pp.

——Sources of Information on State and Local Government with Special Reference to the State of Washington. Distributed by University of Washington Press, Seattle 5, Wash. Report No. 113. Jan. 1951. Mimeo. 64 pp. $1.50.

——Symposium on the Identification and Classification of Soils. Published by the American Society for Testing Materials, 1916 Race St., Philadelphia 3, Pa. Special Technical Bulletin No. 113. 1951. Tables. 91 pp. $1.65.

VERMONT—Public Water Supplies. State of Vermont Department of Health, Sanitary Engineering Division, 2 Colchester Ave., Burlington. 2nd Ed. 1951. Tables. Map. 51 pp.

VIRGINIA—Annual Salaries of Municipal Officials in Various Virginia Cities. League of Virginia Municipalities, 906 Travelers Bldg., Richmond 19. Report No. 340. June 1951. 4 pp.

WAVERLY, IOWA—Annual Report, Municipal, Electric, and Water for the City of Waverly, April 1, 1950 to April 1, 1951. Unpaged.

WESTCHESTER COUNTY, N. Y.—Report on the Water Resources of Westchester County, N. Y. Westchester Water Works Conference, Water Resources Committee, County Office Bldg., White Plains, N. Y. 1951. Tables. Maps. 10 pp.

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Newest pumping engine of the Brush, Colo., Fire Department - built by the American Fire Apparatus Co., Battle Creek, Mich., and powered by International's new Super Red Diamond engine.

Fire Boat Batteries Use Addative, Get Longer Life

Standby batteries on the Port of Oakland's fireboat have shown longer and more serviceable life by the use of AD-X2. In December 1947, the 14 six-volt marine batteries on the vessel were checked, and it was found that 9 of them were mechanically unsound. These were replaced, and the 5 mechanically sound batteries were treated with Battery AD-X2, made by Pioneers, Inc., 2411 Grove St., Oakland 12, Calif.

Rechecked on April 19, 1949, these treated batteries were discovered to have a somewhat greater capacity than the 9 new batteries, which were then treated with AD-X2.

During the period of March 10 to 16, 1950, the 5 Titan batteries were checked again and 3 showed an immense increase in capacity over and above previous tests. The manufacturer's rating for these batteries is believed to have been 320 ampere hours; and it is, therefore, concluded that the condition of these batteries is excellent and capacity above original.

One battery showed a decrease in capacity due to broken separator. After repairs the battery was capacity tested which indicated somewhat better than original capacity. The fifth battery indicated 272 ampere hours, approximately the same as it did in the tests one year previous.

Apparently, the treatment of these batteries with AD-X2 has roughly doubled their capacity. All data for these tests were taken by the Oakland Fire Department Marine Engineers.

The fireboat is propelled by two unsupercharged 6-cylinder, 650-hp MacIntosh and Seymour diesel engines. On the main deck are 3 supercharged 8-cylinder 300-hp Buda diesel engines to operate 3 pumps. These deck pumps are 2-stage centrifugal 2,000-gpm with exhaust ejector priming made by United Iron Works, Oakland. The two main pumps are electric-driven, single-stage centrifugal 2,000 gpm made by the Frederick Iron and Steel Co., Frederick, Md.

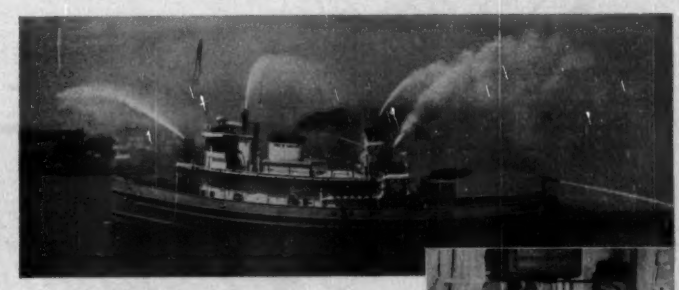
Infilco's new headquarters in Tucson, Ariz.

Infilco Starts Construction Of New Headquarters

Having moved executive, engineering, and sales offices to 2750 S. 12th Ave., Tucson, Ariz., from Chicago last September, Infilco, Incorporated, makers of water conditioning and waste and sewage-treatment equipment, have started construction of a new headquarters building.

The one-story structure will be built on a rigid steel frame with non-load bearing brick curtain walls. It will occupy 7½ acres, comprise 36,000 square feet floor space, and house over 200 employees at a cost of more than $400,000. Especially designed for the Southwest with an umbrella roof to guard against direct sunlight, the building is treated with acoustical tile, has a resilient floor covering, and complete winter-summer air conditioning system. Designer was Paul R. Williams, California architect, who had Bernard J. Friedman of Tucson as his associate. A. E. Magee designed the electrical engineering, and heating and air conditioning system was done by Benjamin and McLain, local engineers. The Murray J. Schiff Construction Co. is handling the general contracting work.

When the new building is completed, the chemical laboratories will be brought out from Chicago to join the other divisions in Tucson. Manufacturing and certain phases of engineering will remain in the Chicago plant at 325 W. 25th Place.



Above is a photograph of the Port of Oakland's fireboat in action. At the right, Dante Barnardini, Chief Engineer, checks the boat's batteries.

The fire-fighting facilities consist of 12 manifolds, 6 on each side, which were installed by the U. S. Navy. Seven turrets are strategically located on the boat with tips from 1¾-inch to 3-inch. These are made by the Akron Brass Co., Wooster, Ohio. The main deck is protected by a ring of 29 fog nozzles made by the Rockwood Sprinkler Co., 50 Harlow St., Worcester 5, Mass.

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Mechanically Stoked Incinerator Plants

City of Los Angeles
100 ton unit for city refuse provision for second unit. Engineers: Greeley & Hansen, Chicago

Mayaguez, Puerto Rico
40 ton unit for city refuse.

Gloucester City, N. J.
40 ton unit for garbage and rubbish, with vapor rotary hearth for sewage sludge. Engineers: Andrews & Gieseke, Philadelphia

The Atlantic Refining Co.
Point Breeze, Philadelphia
Large unit with waste heat recovery system for handling filter cake from waste water treating plant.

City of Saginaw, Mich.
Multiple hearth furnace for incineration of raw primary sewage sludge. Engineers: Hubbell, Roth & Clark, Detroit

Esso Standard Oil Co.
Baltimore, Md.
For handling tank bottoms, liquid wastes, and general refuse.

Marsh & Co., Inc.
South Boniville, Pa.
4 different units, two multiple hearth units one for sewage sludge, and a waste solvent destructor.

Washington Suburban Sanitary Commission
Hyattsville, Md.
2 units totalling 200 tons for garbage and rubbish. Engineers: Metcalf & Eddy

Pomona, California
3 units totalling 225 tons for garbage and rubbish. Engineers: Boyd & Veatch, Kansas City, Missouri

Lawrence, Mass.
2 units totalling 300 tons for garbage and rubbish. Architects: Andrew, Hastings & Pratt

Gretna, Louisiana
2 units totalling 100 tons for garbage and rubbish. Engineers: Alvin E. Haerd and Carl Schneider

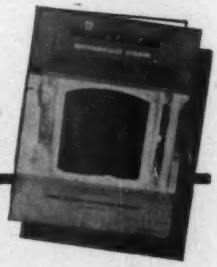
Hempstead, N. Y.
4 units totalling 672 tons for garbage, rubbish, etc. Will be largest mechanically stoked plant in the United States. Includes waste heat boilers, dust collectors, and mechanical ash removal. Engineer: Henry W. Taylor

Marsh & Co., Inc.
Delmar, N. J.
90 ton unit for general refuse.

Currently, Morse Boulger Mechanically Stoked Incinerators for municipal refuse, sewage sludge, and industrial wastes, are being engineered for or are under construction in localities and plants listed at the left.*

Mechanically Stoked Incineration is the *modern* way to dispose of rubbish, garbage, sludges, wastes, etc., and it's practicable for any size community. Our engineers will be glad to help you and your consulting engineers draw up recommendations to meet your incineration requirements. To this important work, our engineers will bring nearly sixty years' experience in the design and construction of incinerators.

*An additional 79 communities use Morse Boulger Incinerators.



Send for Bulletin 111-A which gives details of the Morse Boulger Mechanically Stoked Incinerator.

MORSE BOULGER DESTRUCTOR CO.
205-R EAST 42nd ST. • NEW YORK 17, N. Y.
Representatives in Principal Cities

Cleveland's Fire Department Cites Value in Use of New Self-Generating Oxygen Breathing Apparatus

During 1950, the three Rescue Squads of the Cleveland, Ohio, Fire Department responded to 2,772 "regular" alarms, and went out on a total of 1,257 "emergency" calls, compared with 2,622 "regular" and 1,098 "emergency" calls during the preceding year.

All squads operate under the Bureau of First Aid and Rescue Service, commanded by Captain Charles G. Eisenhart, who reports to Elmer M. Cain, who has been Chief of the Cleveland Fire Department since 1949. Rescue Squad No. 1 is located in downtown Cleveland; Squad No. 2 covers the West End, and Squad No. 3, the East End of the city. Each Squad has its own rescue car. The squads and cars respond not only to certain mandatory and multiple alarms, but also to emergency alarms, often when no other fire apparatus is called out.

Safety, First Aid Equipment

A variety of safety and first aid equipment, much of it manufactured by, or supplied through, the Mine Safety Appliances Co., of Pittsburgh 8, Pa., is carried in each rescue car. A new item is the Chemox self-generating oxygen breathing apparatus. This is a combination of a rubber face mask fitted with wide vision lenses, to which is attached breathing tubes leading to a replaceable, chemical-filled canister. These in turn open into a breathing bag. Moisture in the exhaled breath activates the chemical (potassium tetraoxide) in the canister, evolving a plentiful supply of oxygen for the wearer's breathing requirement. The chemical, while generating oxygen, also absorbs exhaled carbon dioxide and moisture. An automatic timing device on the Chemox rings a bell at the end of 45 minutes, warning the wearer that he should return to fresh air for canister replacement.

Firemen in action are fully protected against oxygen-deficient atmospheres for a minimum of at least 45 minutes because they are equipped with Chemox self-generating oxygen breathing apparatus manufactured by the Mine Safety Appliances Co.

Gasoline, Heat, Smoke, Humidity

Captain Eisenhardt recalled one particularly bad fire that broke out in the storage basement of a garage. There had been a gasoline explosion and there not only was considerable heat, but there was dense smoke, and extremely high humidity.

An extra Rescue Squad was called out, and seven men wearing Chemox apparatus worked in the heart of the blaze for 15 minutes. Three of the men had never used the Chemox at a real fire, but their response to the use of this equipment was very good.

An air space is left around the headband assembly of this glass fire helmet to allow for ventilation.

Glass Fire Helmet

Molded Fiberglas, said to have greater structural strength than stainless steel, on a strength-to-weight ratio, is used in the latest fire helmet development, according to the manufacturer, the E. D. Bullard Co., 275 8th St., San Francisco 3, Calif. Besides offering unusually high impact resistance, the Hard-Boiled fire helmet is lighter in weight than helmets made of other materials. Weight has been reduced to approximately 20 ounces for the complete helmet.

Permanent, non-aging colors are molded into the equipment and standard colors are black, white, and red, although any color can be supplied. The ribbed crown design adds to the protective qualities, without sacrificing resilience, or the shock-absorbing characteristics of the material. This resin bonded Fiberglas material is impervious to moisture and most acids.

The patented six-point suspension of the headband assembly provides great strength to absorb blows, and also permits the removal and replacement of the entire assembly in less than a minute.

Treats "Hard-to-Treat" Water Successfully

A new ion exchange unit for the treatment of water in steam plants has been developed in the research laboratories of The Permutit Co., 330 W. 42nd St., New York, N. Y., according to Henry W. Foulds, president. To be known as the Dual Bed ion exchanger, the new unit eliminates the need for much elaborate equipment and for handling such dangerous chemicals as caustic soda, sulphuric and hydrochloric acids during the regeneration process.

He reports that the equipment provides simple, inexpensive, water softening and lowers or removes alkaline content. Its water yield is described as safe because the unit cannot produce an acid water during the treating step or acid waste waters during regeneration. It employs new type resins that are regenerated with plain salt. In addition to softening water, the new resins remove alkalinity and sulfates.

In certain areas such as Texas and the West Coast, where the natural occurrence of sulfates in drinking water is so high as to produce a laxative effect, these new resins offer possibilities, not provided for by previous ion exchange resins. Removal of these chemicals is one of the outstanding characteristics of the Dual Bed exchanger.

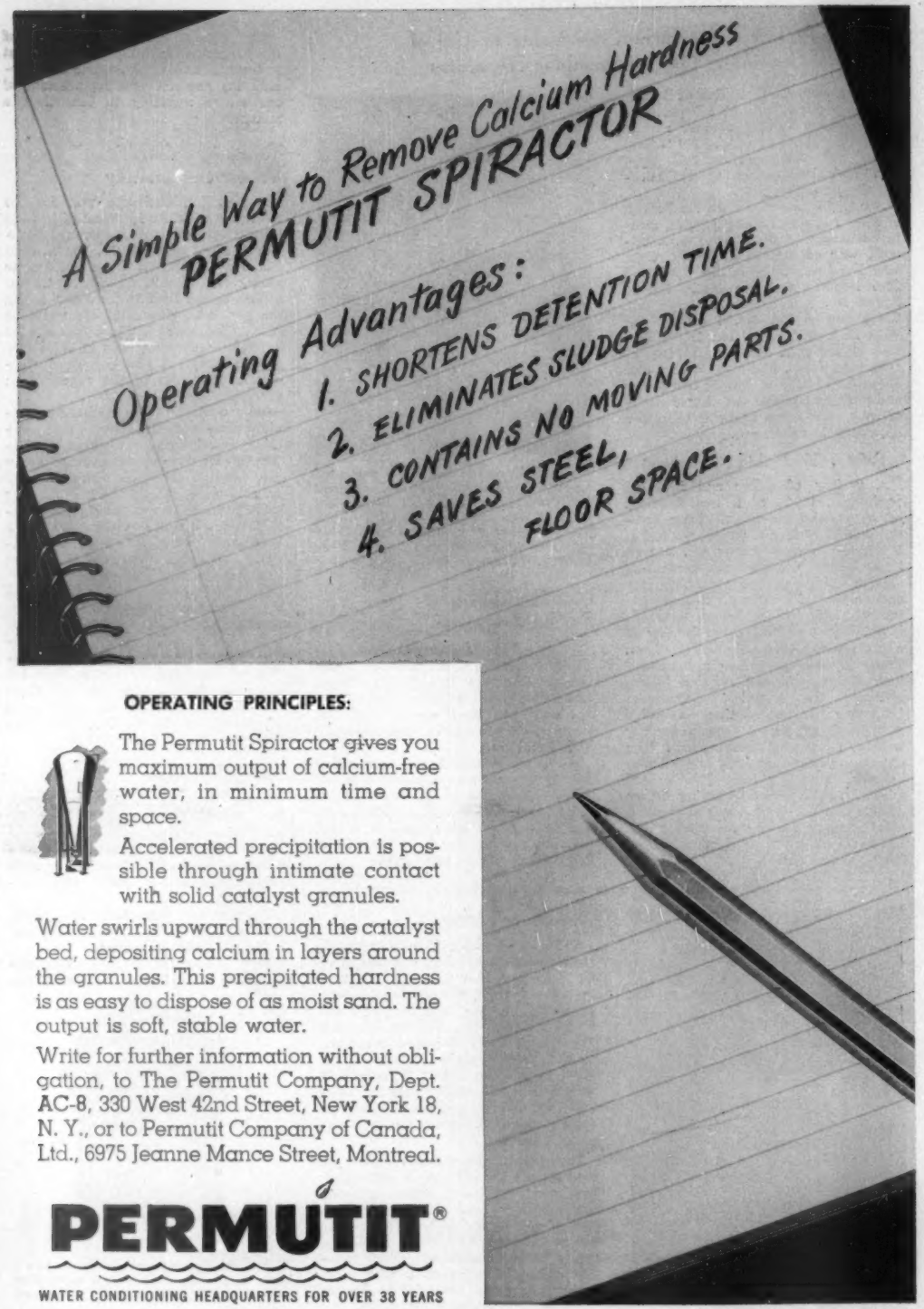
Official Badges

Since 1879, the C. G. Braxmar Co., Inc., 216 E. 45th St., New York 17, N. Y., has been supplying badges for official use of city, county, state, and other governmental agencies, or such departments as fire, police, and sanitation.

Badges are furnished in nickel, chrome plate, sterling silver, gold plate, rolled gold and solid gold.

The manufacturer has literature available describing its various badges.

This Fire Department badge is available in nickel, chrome plate, sterling silver, gold plate, rolled gold, and solid gold.


A Simple Way to Remove Calcium Hardness
PERMUTIT SPIRACTOR
Operating Advantages:
1. SHORTENS DETENTION TIME.
2. ELIMINATES SLUDGE DISPOSAL.
3. CONTAINS NO MOVING PARTS.
4. SAVES STEEL, FLOOR SPACE.

OPERATING PRINCIPLES:

The Permutit Spiractor gives you maximum output of calcium-free water, in minimum time and space.

Accelerated precipitation is possible through intimate contact with solid catalyst granules.

Water swirls upward through the catalyst bed, depositing calcium in layers around the granules. This precipitated hardness is as easy to dispose of as moist sand. The output is soft, stable water.

Write for further information without obligation, to The Permutit Company, Dept. AC-8, 330 West 42nd Street, New York 18, N. Y., or to Permutit Company of Canada, Ltd., 6975 Jeanne Mance Street, Montreal.

PERMUTIT®

WATER CONDITIONING HEADQUARTERS FOR OVER 38 YEARS

The moldboard of this new Sno-Plow follows the contours of street and road surfaces without imposing twisting strains on the truck chassis.

Adjustable for Snow Plowing or Scraping

Three models of a new reversible trip blade Sno-Plow for use on trucks with a capacity of 1½, 2 to 4, and 5 to 10 tons have been added to the line of V type and one-way blade type by Frink Sno-Plows, Inc., 205-227 Webb St., Clayton, N. Y. The moldboard is readily adjustable to either of tow positions—for plowing or for scraping.

The machine's drive frame assembly is pivotally connected to a conical semicircle which permits the moldboard to follow the contours of street and road surfaces without imposing twisting strains on the truck chassis. Four different right or left plowing angles in addition to right angle with the road for bulldozing are available.

A preloaded trip spring with moldboard linkage maintains a more constant pressure during the entire tripping cycle and prevents the chatter at the cutting edge found in the ordinary trip blade plow. This trip mechanism is all enclosed in the conical semicircle shown. After passing an obstruction, it quickly returns the moldboard to working position without jumping up and losing snow at the ground line.

Bulletin No. 51FA issued by the company describes the equipment in detail.

Food Waste Disposal

An automatic non-clogging food waste disposer, announced earlier this year, is being produced by Hotpoint, Inc., 5600 West Taylor St., Chicago 44, Ill., in sufficient quantities for shipment to dealers. This machine has a shredding mechanism to rotate in either direction, thereby doubling the life of the grinding parts and preventing jamming or clogging.

The Model MW-6 has a three-way sink cover that can be turned to start the mechanism, or used as a sink stopper or strainer. In one-control shredding, the shredder rotates in one direction, then reverses its direction when the control is turned to an alternate setting.

Engineered for easier installations with existing plumbing, the device has a new lock ring that allows the plumber to turn the Disposall to line up with water pipes. It is shorter, more compact than former types, and leaves more storage space under the sink.

The new control lock fits in the sink drain. When it is turned upside down, it makes a water-tight stopper.

One-Man Chain Saw

A new 16-inch lightweight, one-man, gas-driven power chain saw is reported by the Lombard Governor Corp., Ashland, Mass.

Its features include an automatic oiler, automatic clutch, and recoil starter. Close-to-ground cutting and handy two-position handling make this an ideal saw for tree work, reports the manufacturer.

The engine has a one-piece crankshaft, needle bearing forged steel connecting rods with heavy duty ball bearings at both ends of the shaft.

The unit is employed by farmers, loggers, contractors, pulp cutters, orchardists, park departments, cemeteries, and country clubs as well as to any individual with trees to cut and trim.

The chain saw weighs 27 pounds and costs $265 fob factory.

Lightweight chain saw, which features automatic oiler, clutch, and a recoil starter. The engine has a one-piece crankshaft.

What's the shape of your job?
BLAW-KNOX
Curb and gutter forms will handle it at lower cost
WHATEVER kind of street paving work you have, one set of Blaw-Knox Steel Street Forms handles every curb, curb and gutter or sidewalk job, from simple straight work to curved or serpentine shapes. Completely interchangeable, they can be used over and over in combinations to fit a wide variety of jobs. You get better quality work while saving time and money. Start your set of Blaw-Knox Steel Forms now — expand it any time to meet future requirements.
Straight curb forms
Curb and gutter forms
Sidewalk forms
Send for Bulletin 2259
BLAW-KNOX
BLAW-KNOX DIVISION of Blaw-Knox Company
2009 Farmers Bank Bldg., Pittsburgh 22, Pa.
New York • Chicago • Philadelphia • Birmingham • Washington • San Francisco

Chief John Lee and Officer Hugh Poore are shown here using radio to talk to other units of the county patrol. They find that their G-E equipment withstands heavy vibration abuse over rough county backroads.

IN MARIETTA, GEORGIA—IT'S

Terminal Taxi dispatcher George Fletcher keeps 5 cabs under radio control. Efficient use of cab mileage via radio dispatching can mean the difference between profit and loss for small fleet operator.

Marietta Fire Department, represented here by Chief Howard Schaffer (standing), relies on mobile G-E radio unit installed in chief's car. For emergency coordination, Fire Department and Police Department are on same radio net.

Driver O. L. Murdock acknowledges call on his General Electric hand mike. Fleet radio maintenance technicians report that G-E quality components keep sets working at peak efficiency for unusually long periods.

Cobb County REA Co-op is managed by Carl Hamby (at car). This is another one of many progressive Co-ops that used G-E 2-way radio for fast customer service.

ALL MUNICIPAL SERVICES—police, fire, county patrol, rural electric co-op, and water supply vehicles adopt latest in mobile communication equipment . . .

G-E 2-Way Radio

What are the reasons behind the strong nationwide trend to General Electric municipal communications?

Briefly, here are two of them:

. . . Because G.E. makes more of its components than any other manufacturer, you get solid G-E quality in such major items as tubes, coils, speakers, transformers, dynamotors, capacitors and many more.

. . . Municipalities can *depend* on this equipment—and on the name behind it—for engineering, reliability and long life.

At Electronics Park, G-E units are designed and tested under every condition of weather and operating use. Whatever the size of your city, we have specialists who will survey the problem at no obligation to you. Call your nearest G-E office for action on this.

First G-E 2-way FM police radio system in the U. S. is proud claim of the Marietta force. Officers J. C. Lamb and Roy Hardin are shown here at downtown traffic post.

Police Chief Ed Hunter, at desk in headquarters, is flanked by G-E 50-watt desk-mounted transmitter.

CALL YOUR G-E COMMUNICATIONS MAN . . . at our office near you, or write: *General Electric Company, Section 1081, Electronics Park, Syracuse, New York.*

From REA county office, W. T. Spears dispatches trouble trucks to rural homes for on-the-spot check and rapid customer service.

You can put your confidence in—

GENERAL ELECTRIC

Here's a great new Burroughs to speed your accounting

Never before have governmental units had the opportunity to mechanize their accounting at such moderate cost—because never before has there been a medium-priced machine so flexible and fast; so easy to operate, as the sensational new Burroughs-Sensimatic.

This is the all-new, amazingly versatile figuring tool—the machine with a "mechanical brain" that directs it through every accounting job swiftly, easily, accurately. The Sensimatic makes possible the complete mechanization of all your record keeping work from a single machine.

Investigate now. Learn how the Sensimatic can save dollars, hours and effort . . . how surprisingly little it costs to own. Write for complete information today. Burroughs Adding Machine Company, Detroit 32, Michigan.

Handles all These Jobs
and more

- Budgetary Accounting
- Public Utility Billing and General Accounting
- Payroll
- General Ledger
- Tax Billing
- Cost Records

It's the Sensational

Burroughs Sensimatic

accounting machine

WHEREVER THERE'S BUSINESS THERE'S **Burroughs**

Sterling Engine President

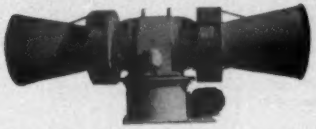
Kenneth S. Thomson has been elected president of the Sterling Engine Co., 1270 Niagara St., Buffalo, N. Y., manufacturer of diesel, gasoline, and gas engines, widely used in marine and industrial applications. He recently resigned as executive secretary of the Cleveland Association of Credit Men to accept his present position.

K. S. Thomson

Other officers reported by Sterling are: Leslie D. Calhoun, vice-president, in charge of engineering, and Harold W. Burkett, who continues as secretary and treasurer. Both are well known in the diesel and gasoline engine manufacturing industry.

Besides Mr. Thomson, the company's board of directors is comprised of: L. W. Metzger, Mid Dale Co., Philadelphia; M. G. Shevchik, Elliott Co., Jeannette, Pa.; W. R. Forsythe, Ohio Crankshaft Co., Cleveland; I. F. Felt, financier, New York City; B. L. Claybaugh, financier, Harrisburg, Pa., and Addison F. Vars, National Associated Industries, Washington, D. C. Continuing as general counsel is F. G. Raichle, Buffalo attorney.

New York's 40-hp Sirens Produce 128 Decibels



Powerful 40-hp sirens made by H. O. R. Co., Inc., for the City of New York.

After running tests on 40-hp electric air-attack sirens made by H. O. R. Co., Inc., 40 Broadway, Staten Island 10, N. Y., the City of New York purchased 24 which were delivered in February 1951. The tests were conducted by the Department of Public Works engineers. These specially designed sirens are revolved in a complete circle by ½-hp motor, and produce 128 decibels, a very high rating.

Truck Tailgate Lifts the Load

Maintenance crews can eliminate the physical labor of lifting loads on or off a truck platform by using a low-cost, hydraulically operated lifting gate manufactured by the Hercules Steel Products Corp., Galion, Ohio.

The Hercules Load-N-Gate has sufficient capacity for a wide range of service; it is available in four sizes, and is easy to install. The platform may be "locked" at any desired height to facilitate efficient loading or unloading.

A Power Vacuum Leaf Rake That Enriches the Soil

RAKES — VACUUMS — FERTILIZES — ALL IN ONE OPERATION

The POWER-VAC-RAKLEAN

POWER VACUUM The leaves loosened from the ground by the rotary rake are sucked by a powerful vacuum fan into the hammer-mill.

HAMMER MILL Here the leaves are ground into a powder. A mesh screen prevents the leaves from blowing out until fully pulverized.

BLOWER OUTLET The blower shoots the leaf powder out upon the ground, where it forms a natural fertilizer for the soil.

Easily attached or detached from your tractor in less than five minutes

SAVES TIME AND MONEY . . . WRITE FOR CIRCULAR

SPEEDY-SODAK MFG. CO.

4th and FAIRFAX — SIOUX FALLS, S. DAK.

YOUR BEST BUY

NEW PATHFINDER PIPE LOCATOR

★ POWERFUL PRECISION UNIT
★ ECONOMICALLY PRICED
★ LIBERAL TRADE-IN PLAN
★ BRILLIANT SAFETY PAINT
★ LIFE TIME GUARANTEE

Only PATHFINDER offers all vital features you want . . . combined in one handy, compact unit. Quickly, accurately it locates position and depth of pipes, tees, valves, buried tools. The liberal trade-in plan gives you an added opportunity to save. Get the facts and you'll buy PATHFINDER!

Write! State model and year of locator to be traded.

PATHFINDER COMPANY
1726 Beverly Drive • Pasadena 7, California

PUSH PIPE under streets, walks, tracks, floors . . .

. . . with a GREENLEE PIPE PUSHER

Speed jobs with this quick, simple way to install underground pipe. With the GREENLEE *one man* pushes pipe under obstacles . . . no tearing up of pavement, floors, lawn . . . eliminates extensive ditching and tedious backfilling! Two models and special power pump to fit your various jobs. Write for facts today.

GREENLEE

Greenlee Tool Co., 2028 Columbia Ave., Rockford, Ill.

El Paso, Texas, gets thirteen new HARLEY-DAVIDSONS for more effective traffic control

Shown above are eight of 13 new 1951 Harley-Davidson Police Motorcycles placed in service by the Traffic Squad at El Paso, Texas. Left to right: Officer R. S. Aumen; Capt. J. C. Risinger, Head of Traffic Dept.; Officer G. G. Allen; D. G. Withrow, Dealer; Officers R. L. Harris; R. D. McCammon; Jack Morris; D. D. Allen; D. S. Adams; Sgt. Clyde Hughey.

EL PASO, TEXAS, 25-year user of Harley-Davidsons has purchased thirteen 1951 police models since the first of the year. This makes a total of 17 Harley-Davidson Police Motorcycles now in service with the traffic department of this progressive and thriving southwestern metropolis.

Your city can also benefit from the use of more Harley-Davidsons. These big, powerful motorcycles are built especially for police work. Their easy handling, high acceleration, road-hugging stability, effortless steering, oil-cushioned riding ease and other features help the mounted officer do his duty more efficiently. Ask your dealer for complete information on the latest model Harley-Davidson Police Motorcycles, Servi-Cars and Sidecars . . . or write

HARLEY-DAVIDSON MOTOR COMPANY, Milwaukee 1, Wis.

POLICE MOTORCYCLE MANUAL
You'll find many helpful ideas for your traffic department, in this new, illustrated 16-page booklet. It's chock-full of information about police motorcycles and their use in law enforcement and accident prevention work. Your copy will be sent promptly on request. No obligation. Write today.

HARLEY-DAVIDSON

MOTORCYCLES POLICE BETTER TRAFFIC CONTROL **SERVI-CARS**

Special Sealing Provided In Curb and Corporation Stops

Extra precision in the machined surfaces of the curb stops, corporation stops, and hydrant cocks made by the Mansfield Water Works Brass Co. insure a positive seal and long, efficient life.

This equipment, known as Mansfield Micro-Seal stops, is machined from high grade brass castings and tested to resist pressures far beyond the safety factor of any city line.

A folder describing them is available by writing the Mansfield Water Works Brass Co., 287 N. Diamond St., Mansfield, Ohio.

Worm and Gear Operated Valves

Cast in semi-steel, this valve is made in 8, 10, and 12-inch sizes.

Worm- and gear-operated valves have been added to the line of the Homestead-Reiser lubricated plug valves, as manufactured by the Homestead Valve Mfg. Co., P. O. Box 550, Corapolis, Pa.

Identified as Figure 502 GW, the new valves have the patented Self-Sealed construction characteristic of all the Homestead-Reiser valves; port area equivalent to 100% of the area of standard pipe; are cast in semi-steel, and made in 8-, 10-, and 12-inch sizes.

According to the company, these valves will soon be available also in cast-steel, full-port type to be known as Figure 562 GW; and in venturi type sizes up to 14 inches. In the venturi type, they will have face-to-face dimensions identical to those of like-sized series 15 wedge gate valves, and will be designed as Figure 512 GW for semi-steel, and Figure 572 GW for steel. Reference Book 39-5, gives full details.

More and more cities are requiring that all homes in new community developments be equipped with Food Waste Disposers.

It makes good sense. The manpower normally required to collect the garbage from these homes can be used to better advantage. The community is cleaner, healthier because food waste is disposed of *before* it becomes garbage . . . shredded to bits and flushed down the drain in seconds. The practicability and economy of this method have been proved in thousands of installations.

Most builders are glad to co-operate. They know that Food Waste Disposers, especially if they bear the Westinghouse Waste-Away® name, make their houses more attractive to prospective buyers.

If you would like to explore the possibilities of such action, just drop us a note. We will be glad to consult with you.

Westinghouse
WASTE-AWAY
ELECTRIC FOOD WASTE DISPOSER

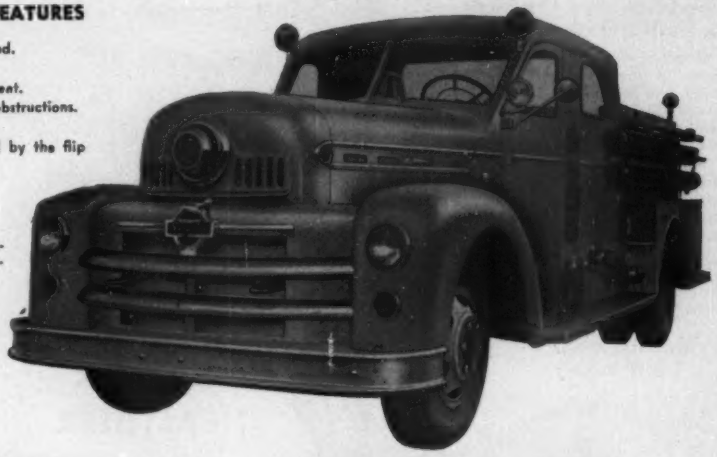
. . . of course, it's electric!

WESTINGHOUSE ELECTRIC CORPORATION
Electric Appliance Division • Mansfield, Ohio

YOU CAN BE SURE . . . IF IT'S Westinghouse

IMPORTANT SEAGRAVE FEATURES

- Completely redesigned front end.
- Flush, sealed-beam headlights.
- New type adjustable, driver's seat.
- Running boards free from all obstructions.
- Improved suction hose clamps.
- Improved ladder locks released by the flip of a lever
- Ample radio compartment.
- Large storage compartments
- "Wrap-around" bumper
- Improved ball type pump discharge with locking control handles.
- Directional signal lights.
- "Easy-out" storage battery compartment.
- Improved vacuum operated pump control.
- Modern V-Type Engines.
- Centralized drain control.
- Auxiliary Hi-Pressure Pump (Optional extra).



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Seagrave

THE GREAT NEW SEAGRAVE 70th ANNIVERSARY MODEL

THE SEAGRAVE CORPORATION—Columbus, Ohio.
Bickle-Seagrave, Ltd., Woodstock, Ont.

THE GREATEST NAME IN FIRE APPARATUS

Self-Propelled

Saws concrete or asphalt . . . faster and at less cost! Self-Propelled feature means substantially longer blade life and fewer manhours on the job. For maximum sawing efficiency use the Self-Propelled CONCUT Saw and CONCUT Blue Blades.

Saw before Breaking . . . and get better patches, reduced breaking tool time and lower cost patching.

ONLY CONCUT GIVES YOU THESE FEATURES
Self-Propelled . . . virtually operates itself.
Finger-Tip Control . . controls, valves and gauges on dash panel.
Lever Lock . . quickly raises and lowers blade.

WRITE FOR BULLETIN 12

The Greatest Name in Concrete Saws

CONCUT
CONCRETE SAW

CONCUT CONCRETE SAWING EQUIPMENT, INC.
200 Union National Bank Bldg., Pasadena 1, Calif.

AGENTS:

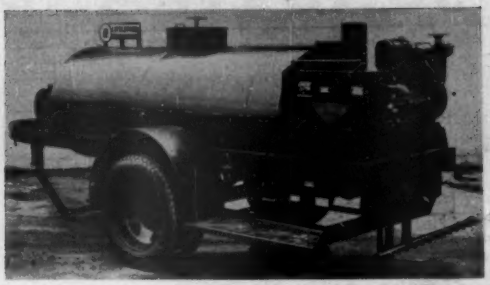
Good, exclusive territories are open for fast-selling "FERRO" signs. Every city needs these highly visible porcelain enamel signs.

"FERRO" signs are nationally known, tested, *proved*. Finest quality steel, deeply embossed, finished in brilliant, permanent porcelain enamel.

If you have allied lines and a following, write today for further information.

FERRO ENAMELING CO.
1100—57th Avenue Oakland 3, Calif.

Bituminous Spray Tank



Available in three types is this utility spray tank for bituminous materials.

The No. 101 utility spray tank for bituminous materials combines a variety of uses. According to the manufacturer, Littleford Bros., Inc., Cincinnati 2, Ohio, the machine's versatility has found use with highway departments, military installations, airports, industrial plants, and parks.

It will do everything that can be accomplished by a heating kettle with motor spray attachment, and in addition will load material from an outside source, circulate the material while heating, spray material through the rear spray bar, and transfer material from one point to another without entering the tank.

The 101 is available in three types and will handle up to 12 feet of spray bar. The single axle trailer, obtained in capacities of 400 and 600 gallons, is used by state and county highway departments, contractors who use it for tack coating and priming, and by cities and towns with limited equipment budget. The skid type without trailer is suitable for mounting on a truck chassis or setting in a flat bed truck. It is ideal for smaller contractors and cities and towns where ease of maneuvering is important. The two-axle trailer mounted type is preferred by cities which need a trailer type unit with a large capacity.

Underdrain System Eliminates "Upset" Filter Beds

The Layne Multi-Plate underdrain system eliminates "upset" filter beds. It is non-clogging, of the baffle plate type, provides back-wash distribution, and low installation cost. The General Filter Co., Ames, Ia., an affiliate of Layne & Bowler, Inc., Memphis 8, Tenn., has prepared material reporting on the system.

Multi-Plates channel the upflow horizontally when backwashing a water purifying plant. These baffle plates are made from stainless steel to exacting dimensions. According to the company, the method provides every desired requirement for perfect collection of water from the filter bed and at the same time assures even and efficient filter backwash. It is adaptable to open gravity flow steel or concrete filters, and closed type pressure filters.

Sales Appointments

H. O. Thompson, president of the Thompson Materials Corp., 303 Cortlandt St., Belleville 9, N. J., announces the following appointments:

Bernard L. Berman, manager of road sales, and J. Walter Lauer, Jr., in charge of sales promotion for new products.

Mr. Berman has been with the company's Sales Department for 14 years and is well acquainted with contractors' requirements and service. Mr. Lauer, who joined the concern recently, spent the past last 20 years with the Keasby & Mattison Co., manufacturer of asbestos products.

Another outstanding Smith-Blair product . . .

Here's a clamp so simple that field emergencies have proved it can be installed under water and under 85 pound pressures by "feel" alone! Its matched copper-armor gaskets go right into proper position without coaxing. And it assures a complete shut-off of leaks on the first tightening of the clamp. The Smith-Blair Full Circle Clamp is unsurpassed for quick, economical, permanent leak repair service. Write for bulletin today, or see your nearest Smith-Blair Distributor.

For coupling pipe sections or for permanent leak repairs on broken or split cast iron, cement-asbestos, or steel pipe. SERIES 3-A 7⅛" to 30" widths for nominal 2, 3, 4, 6 and 8 inch pipe. SERIES 3-B 7⅛" to 30" widths for nominal 4, 6, 8, 10 and 12 inch pipe. Furnished with Duronze bolts on order.

Write for name and address of nearest Smith-Blair Distributor.

End view of clamp showing built-in Copper-Armor Gaskets

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SOUTH SAN FRANCISCO, CALIFORNIA

ALSO...BRONZE SERVICE CLAMPS • STEEL & C. I. FLEXIBLE COUPLINGS • FLEXIBLE REDUCING COUPLINGS

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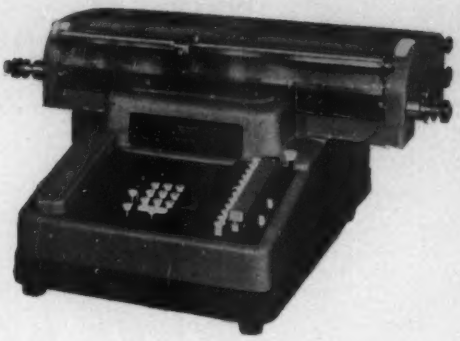
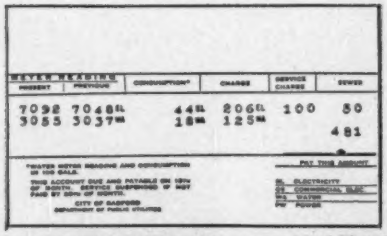
Automatic Accounting Machine



Because of the machine's great application flexibility, it makes no difference to Underwood Sundstrand whether it's utility, tax or payroll accounting, or appropriations or inventory work. The "Mechanical Brain" controls all computations automatically and the simple 10-key keyboard of the Underwood Sundstrand accounting machines makes possible fast, accurate touch operation.

Let us send you the particulars



METER READING PRESENT	METER READING PREVIOUS	CONSUMPTION	CHARGE	SERVICE CHARGE	TOTAL
7092	7048	44	206	100	50
3085	3037	18	125		481

WATER METER READING AND CONSUMPTION IN 100 GALS.

THIS ACCOUNT DUE AND PAYABLE ON 10TH OF MONTH. SERVICE SUSPENDED IF NOT PAID BY 20TH OF MONTH.

CITY OF BAFFORD
DEPARTMENT OF PUBLIC UTILITIES

PAY THIS AMOUNT

EL. ELECTRICITY
CO. COMMERCIAL BLDG.
WA. WATER
PO. POWER

UTILITY BILLING —Underwood Sundstrand Accounting Machine helps Radford, Va., prepare postcard bill for electricity, water and sewer charge.

TAX ACCOUNTING —Moreau, N. Y., Assessors saved 28 days' work with the help of an Underwood Sundstrand Tax Computing Machine.

CENTRAL PAYROLL for city of Norfolk, Va., is automatically computed with the aid of an Underwood Sundstrand Accounting Machine.

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G. W. Musser

Mr. Musser has covered the Southwest territory for the past 30 years. After completing technical training at Ludlow's factory in Troy, he now makes his headquarters at 2415 San Jacinto, Houston 4, Tex., from where he represents the company in Texas, Louisiana, and Oklahoma.

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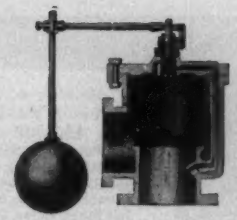
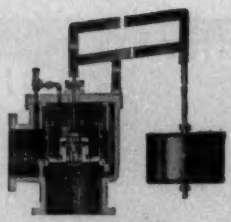
In less than two minutes, copies of letters, engineering drawings, reports, offset paper masters for office forms, can be produced by a new method known as xerography. Anything written, typed or drawn, can be copied or duplicated in sizes up to 8½ by 13 inches. No negative is required. Powder is used instead of chemicals and water, and the same XeroX plate can be used hundreds of times. For complete information address The Haloid Co., 2 Haloid St., Rochester 3, N. Y.

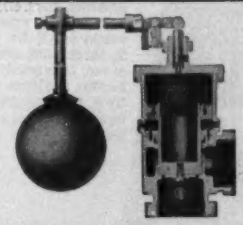
Material to be copied is placed face down on plate-glass top of the XeroX Camera and the image transferred to a plate that has been charged in the Copier. After development, the offset paper master is placed on the image on the plate and the image transferred to the paper master, which is then placed in the Fuser to make the print permanent. The processed paper master is placed on the cylinder of a duplicating machine ready to run, as shown in the photograph. The entire operation takes 3 minutes.



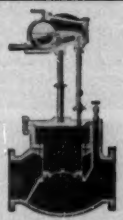
Sizes 3" to 36", cold water, full open or tight closed action, inlet pressure 20 psi-250 psi.



Sizes 2" to 36", cold and hot water, low or high pressure, throttling design.



Sizes ½" to 2", cold water, all bronze snap action, pressure 20 psi to 175 psi.



Sizes 3" to 36", cold or hot water, pressure 20 psi.-250 psi.

For dependable high and low-pressure water level control

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Illustrated above are a few of the many Golden-Anderson float operated control valves designed for either cold or hot water, open or closed tank service in reservoirs, tanks, coagulating basins, mixing chambers, etc. These valves may be of either the quick-opening or throttling design with integral or remote pilot control—available in angle or globe body pattern. This special air and water cushioning feature prevents any chatter or bang in operation.

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MODEL L46 SENIOR LEAK DETECTOR

Detect costly leaks in water and low viscosity fuel lines, in their exact position. Completely portable, simple to operate. Latest electronic improvements and high quality parts, assures unequalled performance. Save time and labor, eliminate costly waste leakage with Goldak Model L46.

MODEL 620 BOX & VALVE LOCATOR

Pin Point Detection of Goldak's Model 620, saves you time and money, with immediate location of Buffalo Boxes, Valves, Covers and Buried Metals. Large areas surveyed in a few moments. Sharp, clear signals. Untiring operation, weighs only 6 lbs. Sturdily constructed, all-weather use. High quality parts assures maximum sensitivity, low operating and nominal replacement costs.

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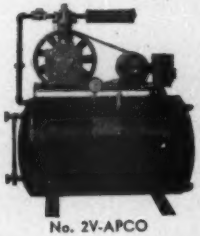
17 TYPES



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GO TO THE ROOT OF YOUR WEED PROBLEM WITH THESE DOLGE PRODUCTS

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Where no vegetation whatever is desired. Penetrates deep down to plant roots and *kills.* Sterilizes the soil. Eliminates backbreaking toil and saves the cost of many labor-hours.

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THE J. E. BURKE CO., Fond du Lac, Wis

Measure and Sample Water and Sewage

This ring balance meter indicates, integrates, and records water flow.

Water shortages of the last few years in certain localities, prospective materials shortages, and the passage of "clean stream" laws have made many plant managers conscious of the need for consistent sampling of waste waters and measurement of their flow.

Many improvised sampling systems have worked well. As the problem has been more fully understood, however, there has been a growing demand for completely automatic systems.

Five such systems have been developed by the Hagan Corp., Pittsburgh 30, Pa. They afford a choice between intermittent and continuous sampling, from lines flowing under pressure or from open channels. In each case a Hagan Ring Balance Meter is used to indicate, integrate and record flow, as well as to actuate the sampling mechanism. The applications were worked out through cooperation between engineers of Hagan Corporation and Hall Laboratories, Inc., water consultants.

The intermittent sampling systems employ a Ring Balance Meter to measure the flow in the line or channel. The meter is equipped with a device which generates electrical impulses proportional to flow. These impulses are fed into a counter which adds these up to some desired value, after which the counter makes a contact on a timing relay.

For continuous sampling from a line flowing under pressure, a Ring Balance Meter with transmitter is used which transmits a pneumatic signal which is linear with flow. This air signal then positions a diaphragm control valve to admit to the container a sample proportional to flow.

Continuous sampling from an open channel can be achieved with the arrangement shown in Figure 4. This, likewise, uses a Ring Balance Meter with transmitter. The pneumatic signal, operating through a pneumatic controller, adjusts the output of a pump which delivers a sample proportional to flow. The dip tube and bubbler system is similar to that illustrated in Figure 2.

An adaptation of Figure 4, in which an electric control (such as the General Electric Thymotrol or the Westinghouse Mototrol) is used to govern the operation of the sampling pump, is shown in Figure 5.

Plant managers desiring additional information concerning sampling and gaging methods are referred to the discussion of *Gaging and Sampling Water-Borne Wastes*, by Charles F. Hauck, of Hall Laboratories, Inc., in the ASTM Bulletin of December 1949. Reprints will be sent by the Hagan Corp., Hagan Building, Pittsburgh 30, Pa.

Returns to Army Duty

Major W. McKean White, Jr., vice-president of the White Mfg. Co., Elkhart, Ind., has been recalled to Army duty. He is serving as chief of procurement inspection at the Air Force General Procurement Headquarters in Detroit, Mich., where he is in charge of inspection of Air Force Procurement activities covering a five-state area.

W. McKean White, Sr., will cover the work of his son with the company in directing production of White asphalt plants, concrete vibrators, railway switch heaters, railway side bearings, bituminous heating kettles, and other products.

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IN PIPE LINE CLEANING FROM MAINE TO CALIF., ITS...

CALIFORNIA...

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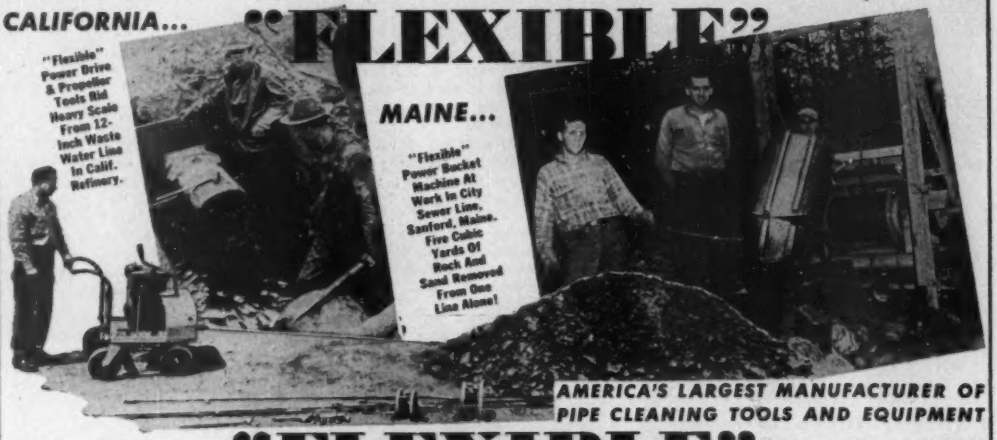
"Flexible" Power Drive & Propeller Tools Rid Heavy Scale From 12-Inch Waste Water Line In Calif. Refinery.
MAINE...
"Flexible" Power Bucket Machine At Work In City Sewer Line, Sanford, Maine. Five Cubic Yards Of Rock And Sand Removed From One Line Alone!

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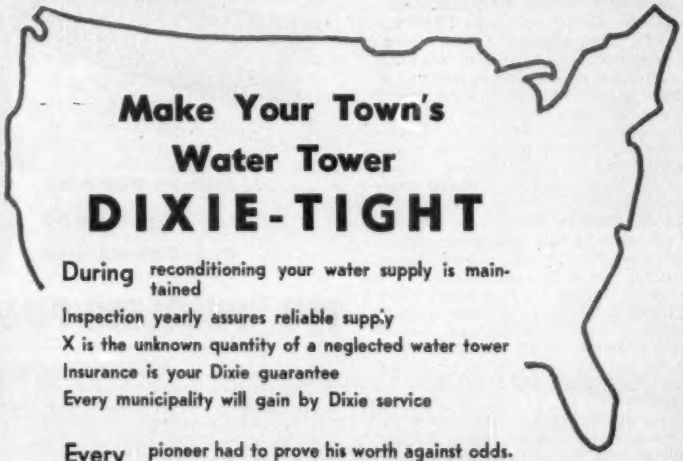
PROVIDENCE, R. I. ..... Box No. 202



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X is the unknown quantity of a neglected water tower

Insurance is your Dixie guarantee

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Ryerson Steel Holds Open House

Visitors watch a demonstration of multiple-torch flame cutting of steel plate during open house day at the new Cincinnati plant of Joseph T. Ryerson & Son, Inc., steel distributors.

Joseph T. Ryerson & Son, Inc., steel distributors, held open house at its Cincinnati, Ohio, steel service plant, 3475 Spring Grove Ave., in celebration of the formal opening of its new, larger plant into which it moved last December.

About 3,000 customers and friends of the firm visited the plant on Friday, June 22nd; employees and their families numbering 400 were entertained by the management on the following day. All were taken on a tour of the plant, after which refreshments and dinner were served. Display booths and placards along the route gave visitors a quick explanation of the company's facilities for stocking, handling, cutting, and shipping steel of all kinds.

Earl R. Nelson, plant manager, was host at the dinner and plant tour. Company officials on hand to welcome guests included: Edward L. Ryerson, chairman of the board; Everett D. Graff, chairman of the executive committee; Charles L. Hardy, president; Clarence B. Randall, president of the Inland Steel Co., the parent company, and Anthony M. Ryerson, asistant general manager of sales of Inland Steel and a director of the Ryerson concern.

The Cincinnati plant of the Ryerson company marks the completion of another step in the firm's over-all expansion program which was started a few years ago. During this period, new plants were built in Los Angeles and San Francisco, a plant established in Cleveland, Philadelphia, and Chicago enlarged and modernized, and work is now underway which will add greatly to the capacity of the company's plant in St. Louis. The Ryerson organization will celebrate its 110th anniversary in 1952.

New FM Mobile Radio Unit

A new FM mobile radio transmitter and receiver unit for adjacent channel operation is now in production at the Link Radio Corp., 125 W. 17th St., New York 11, N. Y. Featuring no adjacent channel interference and definitely no desenitization and no cross modulation, the unit was named through a contest headed by Assistant Chief Inspector Francis A. Burns, Commanding Officer, Telegraph and Communications Division, New York City Police Department. "Expediter," the winning name, was submitted by Sergeant Edward Arnold, radio technician of the Jersey City, N. J., Police Department, and L. P. Hunter, radio technician of the Concord, N. C., Police Department.

THE MODERN LAWN MOWER SHARPENER

CUTS MAINTENANCE COSTS

•

LOWER CAPITAL INVESTMENT

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Economically and Quickly Sharpens All Municipal Mowers

Priced $241.50 (less motor)

Sharpens All Reel Type Mowers • Hand, Power or Gang • 10 to 20 Minutes • No Dismantling No Extra Attachments Needed

All reel type mowers, from 5-inch edgers to 36 inch power mowers, are quickly sharpened to extreme ends of both left and right twist reel blades. Handle, wheels, roller and motor repair in place when sharpening is in process. Bed knife is sharpened in same brackets that hold mower in grinding position. No extra attachments required. One lever puts mower or bed knife in grinding position. 100% steel construction. Grinding head rides on five ball bearing races. Small, compact, easy to operate. Sharpens wood chisels, joiner knives and planer blades without extra attachments. Skate Sharpener Attachments available.

1/3-hp. G.E. 60-cycle Motors now available—$21.50 extra.

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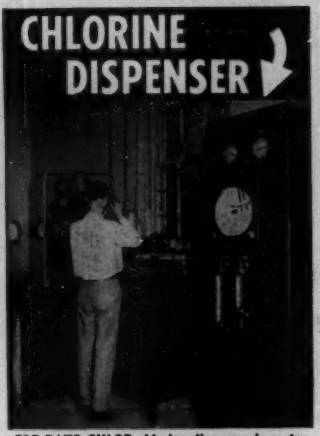

F&P RATO-CHLOR chlorine dispenser in water treatment plant of Florida Utilities Corporation. (Automatic chlorine/water ratio control)

USES?

Swimming pool water purification.
Drinking water purification.
Sewage treatment.
Chlorination processes.
Algae control.

CAPACITIES?

1-6000 lb/day chlorine: cabinet model shown above.
Over 6000 lb/day: panel-mounted equipment.

PRINCIPLE OF OPERATION?

Dry-vacuum solution feed.
Dry-gas feed.

TYPES?

Direct reading flow rate indicating meter.
Manual, semi-automatic, automatic or proportional control.
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PROCESS CONTROL INSTRUMENTS

CITY MANAGER, N. G. DAMOOSE, REPORTS—

AUTOMATIC VOTING MACHINES

Reduce

Election Costs in the City of Ypsilanti, Michigan

In 1946, Ypsilanti, Michigan, using the old paper ballot system, cast 5,328 votes at an average cost per vote of 28.4 cents. At the recent November 7th, 1950 election, using AUTOMATIC VOTING MACHINES, the City cast 5,418 votes (nearly 100 more), at an average cost per vote of 13.2 cents.

In 1946, 74 poll workers earned $1,513, compared to the $715 that 46 workers drew on November 7th, 1950. Savings in labor and printing bills amounted to about $1400.

Similar savings are possible in your community. We should be pleased to estimate such savings at no cost or obligation to your community. Write—

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The series draws from good practice in large and small cities across the nation.

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Concrete Bucket Discharges Into Small Form Openings

The shear-gate bucket opening varies from 2½ to 8 inches in one direction and 6 inches in the other.

With the new Fitzgerald concrete bucket, one can put concrete into form openings successfully as small as 2½ inches. The shear-gate bucket opening varies from 2½ to 8 inches in one direction and 6 inches in the other. The mouth is designed so that the bucket can discharge against the side of a wall, if required. This is of great assistance when pouring concrete into forms against existing walls.

The bucket is currently being manufactured in 1/3, ½, and ¾-yard sizes. It is made of 12-gauge steel, all welded, and reinforced with 2 by 2 by ¼ angles. A two-ton Hydrocrane can handle the 1/3-yard bucket easily. The half-yard bucket is handled conveniently by a 3-ton crane.

The bucket is a product of the Fitzgerald Engineering Co., Inc., P. O Box 289-G, Coral Gables, Fla.

Manages Sales of Construction Equipment For Worthington

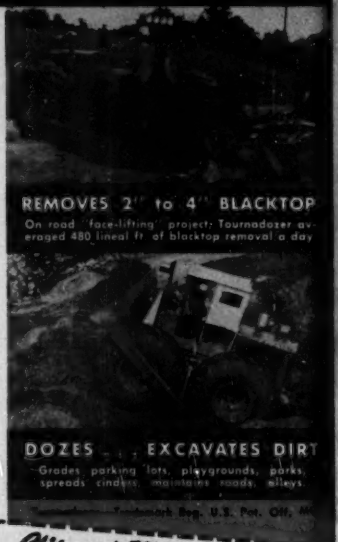
The Worthington Pump and Machinery Corp., Harrison, N. J., has appointed William J. Fleming as manager of the Construction Equipment Sales Division, according to an announcement by W. H. Feldmann, vice-president. John S. Bachman will continue in charge of field sales with the title of assistant manager. Both men will continue to make Dunellen Works, Dunellen, N. J., their headquarters.

W. J. Fleming

Before moving to Dunellen the first of this year, Mr. Fleming was in charge of sales of construction equipment manufactured at Holyoke Works.

1 man, 1 machine speeds garbage disposal
with rubber-tired TOURNADOZER
SPREADS, COMPACTS, COVERS GARBAGE
giant tires compact refuse into minimum space . . . big-blade spreads dirt in even layers

Many communities are now cutting costs with rubber-tired Tournadozer on landfill garbage disposal because 1 man and 1 machine handle *all operations*. Tournadozer excavates disposal trenches . . . spreads truck-dumped garbage. 21.00 x 25 tires compact refuse in normal back and forth travel. Big blade covers garbage with dirt from trench walls, or dozes in dirt as it excavates next parallel trench.


REMOVES 2" to 4" BLACKTOP
On road "face-lifting" project: Tournadozer averaged 480 lineal ft. of blacktop removal a day
DOZES . . . EXCAVATES DIRT
Grades parking lots, playgrounds, parks, spreads cinders, maintains roads, alleys

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Fast 19 m.p.h. speed, plus "go-anywhere" ability, allow Tournadozer to drive cross-town in a matter of minutes to handle scattered municipal maintenance assignments. Result: more jobs handled each day per tax dollar . . . less manpower and machines diverted from other projects. Ask your LeTourneau Distributor for all the facts on how you can save money and time on municipal jobs with versatile Tournadozer. Write or call him TODAY.

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☐ 186 h.p. Model C to be used for:
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Department
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IT'S RUBBER THAT PUTS THE ACTION IN TRACTION

IF thieves, vandals or saboteurs had access to vital public utilities' storage buildings and power plants, the resulting damage could be serious and costly. That's why it's important that such projects be protected by sturdy, trespasser-proof Cyclone Fence—the world's most widely used property-protection fence. Cyclone Invincible Fence (shown here) with extension arms carrying three strands of barbed wire makes an effective barrier to even the most determined intruder.

Because Cyclone Fence is so well constructed of strong, corrosion-resistant galvanized wire, it gives many years of service under the most rugged conditions of climate or terrain. Whenever you have any important municipal project under consideration it will be well worth your while to include Cyclone Fence in the original plans. Whether you must exclude trespassers, protect valuable equipment, or simply control admissions and exits, there is a type and style of fence that will fit your requirements perfectly. For advice and a free estimate on your particular fencing problem, just call on our experienced engineers. There is no obligation. And in the meantime, write for a copy of our catalog on fence. Just use the convenient coupon below.

CYCLONE FENCE DIVISION
(AMERICAN STEEL & WIRE COMPANY)
WAUKEGAN, ILLINOIS • BRANCHES IN PRINCIPAL CITIES
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

NO JOB IS TOO LARGE—NO JOB IS TOO SMALL FOR CYCLONE*

USS CYCLONE FENCE

*Cyclone is the trade-mark name of fence made only by Cyclone Fence Division. Accept no substitute.

CLIP THIS COUPON — SEND IT TO

Cyclone Fence, Waukegan, Ill., Dept. B-81
Please mail me, without obligation, a copy of "Your Fence."

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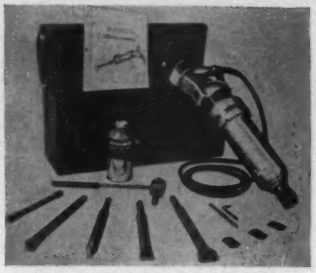
City.....State.....

I am interested in fencing:
☐ Industrial; ☐ School; ☐ Playground; ☐ Residence.

Approximately.....feet.

UNITED STATES STEEL

Electric Hammer of Many Uses



The Kango electric hammer line, in three sizes with tools, is offered by Allied Tools, Inc., 321 Central Ave., Newark 4, N. J. An advantage is that the mechanism of the Kango hammer is so arranged that the striker reciprocates harmlessly between two springs whenever the hammer is withdrawn from the work and only a very slight tremor is felt by the operator. A clutch prevents overload when starting and prevents shocks from reaching the armature spindle, when sudden changes in velocity take place as the blow is struck.

Heavy-duty hammers can be used for drilling holes in concrete from 1-1/16 inch to 3 inches in diameter, breaking solids, cylinder sleeve driving in automobile engines, heavy chiseling of concrete, spade work, tamping ballast, driving rods into the ground. Medium-duty hammers are for drilling holes in concrete from 11-1/16 to 1½ inches, rawl drilling 3/16 to 7/16-inches diameter, medium cutting concrete, and brick stone.

Street-Lighting Constant Current Regulators

New smaller regulator beside old model.

A new line of smaller pole- and platform-type constant-current regulators for street lighting (type CPH) is now available in ratings of 5 to 30 kw with 6.6 or 20 amperes secondary current. These regulators have a 2,400-volt primary connection that operates on 2,280 to 2,520 volts. A special 2,160-volt primary tap provides for operation on 2,050 to 2,270 volts.

The manufacturer, the Westinghouse Electric Corp., Pittsburgh 30, Pa., will supply additional information on its new product.

Emergency Service Corps Meets Truck Parts Shortages

The contribution of the Emergency Service Corps in keeping White trucks and busses in good working condition during the emergency period was emphasized by J. N. Bauman, vice-president of The White Motor Co., Cleveland 1, Ohio, in reviewing the first six months of the E.S.C. program.

Mr. Bauman, who launched the Corps when materials were beginning to be tight and truck parts supplies low, spearheaded a six months' "meet-the-customer" registration. Owners of White trucks have been contacted by the company's sales and service personnel throughout the country, acquainting them with the 10-point E.S.C. program and asking their cooperation in keeping their fleet in top working condition. Each White unit was registered, listing types of operation, annual mileage and parts numbers of major units.

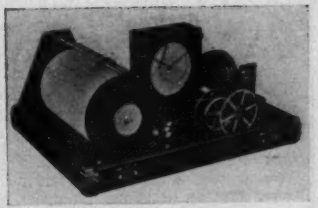
This information is now being tabulated at Cleveland and compiled under the manufacturer's area control of parts. The material is being used not only for parts distribution and quick handling of customers' orders, but to establish manufacturing schedules and materials needs under the government's allocation plan, for parts usages can be projected accurately with this new compiled information.

Portable Pipe Saw Cuts in One Operation

The Wachs national pipe saw is a portable milling machine on wheels which will cut and bevel steel pipe in on operation. It travels around the pipe one operation. It travels around the pipe lution. According to the manufacturer, the E. H. Wachs Co., 1525 N. Dayton St., Chicago 22, Ill., the saw will cut steel or cast iron pipe from 10 to 48 inches diameter; cuts can be made in the ditch or above ground, under water or oil, and in the presence of explosive vapors. The built-in air motor requires 70 cubic feet per minute at 80 pounds pressure.

Only 16 inches of clearance around pipe is required by this pipe saw.

The machine requires only 16 inches of clearance around the pipe; it weighs 285 pounds; provides fast, clean, and accurate cutting, and is built to stand rough treatment and hard work.



Recording Barograph

Perfected after years of laboratory and field research, an entirely new recording Micro barograph has been developed by the American Paulin System, 1847 S. Flower St., Los Angeles 15, Calif., manufacturer of scientific instruments. Accurate and easy to use, this device is employed by geophysicists, geologists, surveyors, and engineers in the oil and mining fields, and others in government bureaus, educational institutions, weather stations, aviation, the maritime industry, and research laboratories.

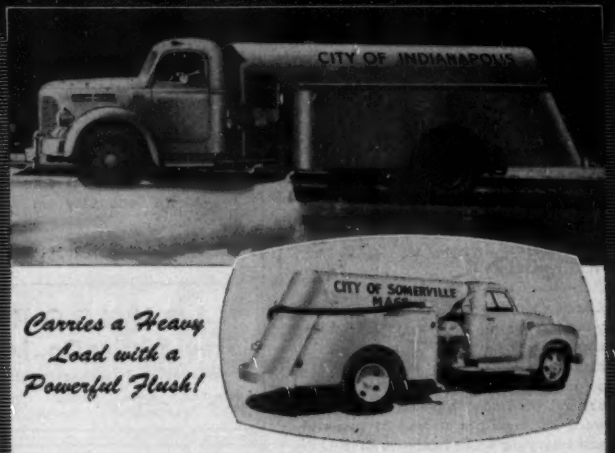
The Micro barograph is constructed on the Nul or Zero-Gauging principle. It records a pressure curve over a range of plus or minus 1.00 inch of mercury and can be used at any elevation from sea level to 10,000 feet by means of a convenient reset. Precision graphs are supplied with each instrument.

HURRICANE FLUSH

Gives this Streamlined

STANDARD STEEL FLUSHER

MORE CLEANSING POWER



Carries a Heavy Load with a Powerful Flush!

It takes a powerful flush to sweep dirt and dust into gutters and sewers. Mere wetting of streets is not enough. Standard Steel equipment is built to supply a full 50 pounds pressure on each nozzle. They carry a heavy load — reloading is quickly accomplished — ease of operating this type flusher is well known to every city using Standard Steel Flushers. Embodying every new mechanical feature, styled for beauty, they reflect the progressive spirit of any city. For Complete Details, Write for Catalog.

OTHER PRODUCTS

Asphalt Pressure Distributors, Maintenance Distributors, Tar Kettles, Patch Rollers, Supply Tanks, Tool Heaters, Asphalt Tools, Construction Brooms.

Built to the Highest Standard

Standard Steel Works NORTH KANSAS CITY, MO

You can install Williams-Hager flanged Silent Check Valves in your water system in any position . . . horizontal, angular, vertical with flow upward or downward . . . and put an end to costly and annoying water hammer. Easy to install or reseat without special tools, they are durable and compact with easy accessibility and low friction. Available in standard pipe sizes from 1" to 20". Investigate the many features of these valves . . . and save!

Write today for Bulletin WH-100.

CHECK VALVES

THE WILLIAMS GAUGE CO.

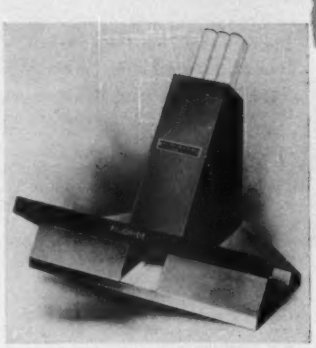
Pump Valves . . . Water Gauges . . . Gauge Cocks . . . Steam Traps . . . Pump Governors . . . Feed Water Regulators . . . Water Columns

3013 PENNSYLVANIA AVE. • PITTSBURGH 33, PA.

Fluoride Comparator

An inexpensive, accurate, and easy-to-operate unit for the control of fluoride dosage in municipal water supplies is available from the W. A. Taylor & Co., 7300 York Road, Baltimore 4, Md.

The Taylor procedure is a modification of the La Mar method which has been adapted to the Taylor water analyzer. The determination is made by adding a single reagent to the water to be tested and comparing the resulting colored solution with a set of liquid standards which are permanently mounted in a plastic slide. These color standards, like all Taylor color standards, carry an unlimited guarantee against fading.



A fluoride comparator, for use in municipal water supplies.

According to the manufacturer, Taylor fluoride reagent is more stable, gives a broader color range, and is less subject to interference by other ions than any other reagent now in use. Practically all determinations required by water purification plants, including pH, chlorine, total iron, color, nitrate, and nitrite, can be made with this set by procuring the color standard slides and reagents for the specific analyses desired.

ROADMASTER
Street Sweeper
WIRE

High Scleroscope Rating
Uniform temper.

Specially processed for high fatigue — against breakage. Long wearing. Conveniently cut and delivered in 100 and 200 lb. boxes. Prompt shipment from stock of all standard sizes.

This gutter broom wire will prove an economy in your service.

"MORE MILES PER BRUSH"

JOHNSON
Steel & Wire Co., Inc.
Worcester 1, Massachusetts

New York Akron Chicago Detroit
Los Angeles Toronto

Faster Post Setting With This Auger

It is an easier matter to do holes for street sign posts, for light poles, for traffic signs or for water-service meter boxes with the new double-helix auger.

The auger fits the Highway earth-boring machine with change. Adapters allow it to fit all popular makes of power-driven, earth boring machines. The augers are manufactured to nine sizes with a maximum size of 36 inches. The manufacturer reports that they are able to dig holes in hard pan, decomposed rick, and some kinds of caliche and sandstone in addition to ordinary ground. Its twin helix design is for the purpose of eliminating back thrust against the side of the hole.

Each half helix has a shank plate with replaceable cutting points of abrasion-resistant alloy steel. The auger is a product of the Petersen Engineering Co., Santa Clara, Calif.

Surfa-slick *Patent Applied for*

SELF-HEATING ASPHALT SMOOTHING IRON

Municipalities! This lightweight, rugged, simple, time and money saving smoothing iron will pay for itself in a few days' use.

HOT IN TEN MINUTES **HOT** ALL DAY LONG

- RUGGED
- SIMPLE
- SAFE
- ECONOMICAL
- LABOR SAVING
- COMPACT

Dealer inquiries requested

No more building and tending fires on your asphalt jobs!

J. E. WOODS MFG. CO.
1516 First St., San Fernando, Cal.

De Laval Executive Promotions

Executive promotions have been reported by the board of directors of the De Laval Steam Turbine Co., Trenton 2, N. J.

W. A. Neumann

Wencel A. Neumann, Jr., was named vice-president of industrial sales. He will be responsible for the industrial and commercial sales of De Laval steam turbines, pumps, blowers, and compressors, IMO rotary pumps, and power transmission equipment. Elected vice-president of engineering was H. G. Bauer, who will also continue as marine sales manager. Charles A. Jurgensen, vice-president of manufacturing, will also continue to serve as works manager.

H. G. Bauer C. A. Jurgensen

Mr. Neumann joined the company in 1946 and until recently was manager of the IMO-De Laval Products Division. Mr. Bauer, with the organization since 1937, served as executive engineer since 1948 and was elected vice-president in 1949. Mr. Jurgensen joined De Laval in 1931. Since 1948 he has been works manager.

The election of James P. Stewart as president was reported in the July issue of THE AMERICAN CITY.

Civil Defense Radio Equipment

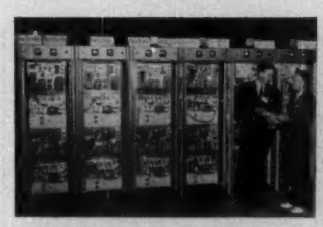
Two new civil defense radio units have come out of the workshops of the General Electric Co., Electronics Park, Syracuse, N. Y. One is a special radio receiver. The other is a mobile civil defense communications center.

The new civil defense FM radio receiver, called the Civil Defender, was demonstrated recently for authorities at Nashville, Tenn.; Charleston, W. Va.; and Atlanta, Ga. It is activated by a special tone transmitted from CD headquarters, and responds only to messages preceded by the tone. The receivers can also be used to sound air-raid sirens, by means of a special switch incorporated in the receiver. The warning devices can be sounded while messages are being transmitted from headquarters.

The radio-equipped trailer was built specifically to be the hub of an emergency communications system in Onondaga County, N. Y.

This mobile communications CD center will be in contact with various public and private agencies involved in Civil Defense, many of which now operate their own two-way radio systems. It will also be tied into the telephone system and the amateur radio net work.

The mobile center will have standby transmitting and receiving equipment to enable CD authorities to operate in emergencies, radio systems of county and city departments, public utilities, and private companies operating 400 radio-equipped cars and trucks.



Neal F. Harmon (left), General Electric Civil Defense coordinator at Syracuse, discusses the emergency communications system with Harvey S. Smith, who is Director of Civil Defense of Onondaga County, N. Y.

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COAL TAR PIPELINE ENAMELS

★ Easy to Apply
★ Easy to Handle
★ Immediately Available

STANDARD GRADE
For service in temperature ranges from 32° to 120° F.

MODIFIED GRADE
For service in temperature ranges from 0° to 140° F.

PLASTICIZED GRADE
For service in temperature ranges from −20° to 160° F.

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GRANT BUILDING • PITTSBURGH 19, PA.

SPARLING
Main-Line Meters

IF accuracy in Main-Line Metering means anything to you—

IF ease of installation and maintenance are considerations—

IF negligible pressure loss through the meter is desirable—

If cost is a factor—

YOU NEED *SPARLING* METERS

Bulletin 311 comes upon request

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New York 17.....101 Park Avenue
Boston 8.....6 Beacon Street
Seattle 1.....1932 First Avenue
Dallas 1.....726 Reserve Loan Life Bldg.
Atlanta 3.....66 Luckie St. N.W.

Rotary Casting Chutes Give Greater Snow Stream Control

Sno-Flyr rotary equipped with 360° "complete circle" revolving tubular chutes casting fresh snow to right and left of airport runway. Operator has chutes aimed to take advantage of wind direction.

"Where to throw it" has rapidly become a serious problem to be solved in directing streams of snow coming out of a rotary plow. This problem of directional snow control has been discussed for several years. It has been studied extensively by state highway engineers and the U. S. Army Air Force.

To help solve this difficulty, the Wm. Bros Boiler & Mfg. Co., 1057 10th Ave., S. E., Minneapolis 14, Minn., announces that it has developed new complete circle hydraulically controlled casting chutes which promise greater snow stream control than ever bfore.

These hydraulically controlled revolving chutes can be aimed by the rotary operation in any direction the operator chooses, both chutes together or separately. They turn a full 360°, are approximately 10 inches in diameter, and 30 inches high. They are finger-tip controlled from the operator's cab by a hydraulic driven motor. Chutes are mounted on ball bearing to give free-running rotation with no sticking or sluggishness. Full directional control through these tubular chutes also increases casting distances and removes "fuzzing" of snow streams for better operator's visibility.

All models of Bros Sno-Flyr rotaries are available with these new chutes as extra equipment. They can also be installed on Sno-Flyr rotaries in the field, from the M-170 up to the M-300 hp models.

Also produced by the Wm. Bros Boiler & Mfg. Co. is a tractor-mounted rotary snow-plow, a special adaptation of the Bros Sno-Flyr, previously mounted only on trucks of special heavy design and approved motor grader patrols. According to the company, this new rotary-crawler combination, now designed to mount on a Caterpillar D-7, brings the advantages of snow clearance by rotary casting to more state, county, township or city highway and street engineers than ever before.

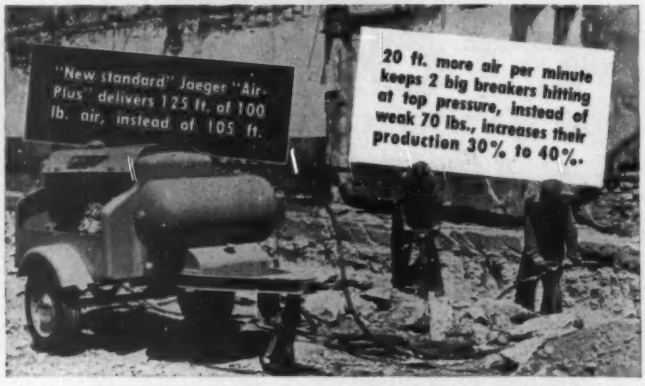
Power to drive plow and rotors comes from two engines mounted on a special counterbalancing platform at the rear of the tractor.

General Sales Manager

Robert J. Murdock, president of the Murdock Mfg. and Supply Co., 426-430 Plum St., Cincinnati, Ohio, announces the appointment of John McKechnie as general sales manager.

An industrial engineer with five years' experience in the exporting and importing field and, as a representative of the Lockheed Corp. stationed in Great Britain, Mr. McKechnie has assumed the sales direction of the Murdock interests both in the manufacture of outdoor drinking fountains, hydrants, hose boxes, and other water service devices and the Murdock air valves.

same men, same tools do
4 days' work in 3


"New standard" Jaeger "Air-Plus" delivers 125 ft. of 100 lb. air, instead of 105 ft.
20 ft. more air per minute keeps 2 big breakers hitting at top pressure, instead of weak 70 lbs., increases their production 30% to 40%.

JAEGER "Air-Plus" COMPRESSORS

75 ft.
125 ft.
185 ft.
250 ft.
365 ft.
600 ft.

deliver 15% to 25% more air *at lowest cost per cubic foot of any compressors on the market,* to run today's tools at their full efficiency, greatly increasing your production with the same men and tools.

See your Jaeger distributor or send for Catalog.

THE JAEGER MACHINE COMPANY 505 Dublin Avenue Columbus 16, Ohio

PUMPS • MIXERS • HOISTS • TRUCK MIXERS • PAVING SPREADERS and FINISHERS

New 16-S Concrete Mixer

Speed and economy are provided by this 16-S concrete mixer.

The T. L. Smith Co., 2835 N. 32nd St., Milwaukee, Wis., reports a new half-yard Non-Tilter concrete mixer designed with features that provide speed and economy. The drum is big in diameter and narrow with extra large drum openings, a wider skip nose, and a wider discharge spout. The machine is equipped with a 4-cylinder air-cooled gasoline engine, syphon-type water measuring tank, and oversize pneumatic tires. It can also be equipped with a 4-cylinder radiator-cooled engine or electric motor.

Among the other features are: channel section welded supporting frame; Universal acting spring suspension; adjustable, shock-absorbing V-belt drive; reduction gears enclosed in oil-tight case; skip vibrator with enclosed operating mechanism; spring stabilizers for changing and mixing cycles, anti-friction bearing equipped, adjustable drum rollers, and automotive type steering.

A closed end charging skip is furnished as standard.

An Arc Welder That Is Also a 3-kw Power Plant

To the Editor of THE AMERICAN CITY:

I was very much impressed with the editorial concerning the welding tools to keep municipal equipment operating, published in THE AMERICAN CITY, for too little emphasis has been placed on this "preventive maintenance" problem. In times of distress and emergency, people rely more and more on government agencies, and especially on the municipal government because it is the fundamental first contact. People will expect the various municipal agencies, such as police and fire departments, street, and water departments, and the like, to "do something" in case an emergency strikes home. It therefore behooves the cities to keep the equipment that they have in tip-top operating condition and perhaps even fabricate equipment that may not be readily available.

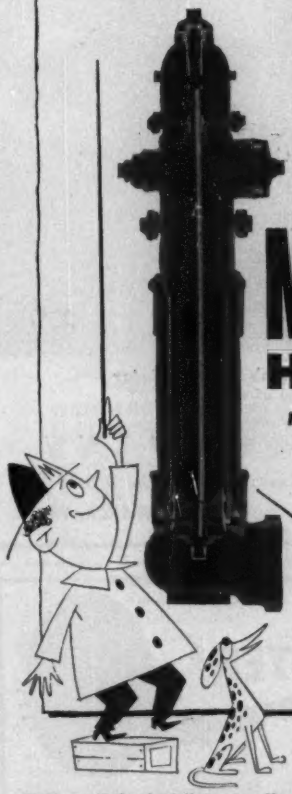
Regarding a desirable welder for municipal requirements, it might be a service to your readers to single out here one of the units that we manufacture. It is a 200-ampere engine-driven a.c. welding generator driven by an Onan two-cylinder gasoline engine, with a gas consumption of approximately three-quarters of a gallon per hour under normal operating use. It is furnished either as a stationary unit or mounted on a two-wheeled pneumatic-tired hand truck, and is light enough to be handled by two men.

The interesting feature about this unit is that it can be very easily converted (by throwing a single switch) to operate as a 3-kw, 110/220 volt, 60-cycle, a.c. emergency power supply.

G. K. WILLECKE, Technical Editor
Miller Electric Mfg. Co.
Appleton, Wis.

Compact Miller gas-driven welder providing 200 amperes of welding current and 3-kw emergency power supply.

Damaged—*back in service quickly!*



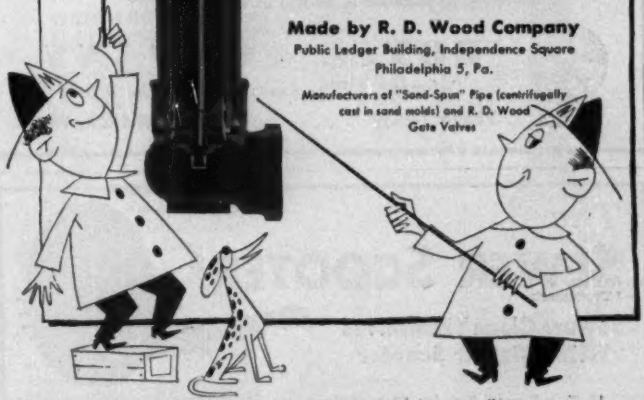
Mathews Modernized Hydrants are designed for service even under today's traffic hazards. When knocked over by an out-of-control vehicle their simple construction and removable barrel make them

easier to repair
easier to replace

MATHEWS HYDRANTS

Made by R. D. Wood Company
Public Ledger Building, Independence Square
Philadelphia 5, Pa.

Manufacturers of "Sand-Spun" Pipe (centrifugally cast in sand molds) and R. D. Wood Gate Valves



Mathews Modernized Hydrants offer these advantages:

Stuffing box cast integral with nozzle section • Head turns 360° • Replaceable head • Nozzle sections easily changed • Nozzle levels easily raised or lowered without excavating • Protection case of "Sand-Spun" cast iron for strength, toughness, elasticity • Operating thread only part to be lubricated • All working parts contained in barrel—removable without excavating • A modern barrel makes an old Mathews good as new • Available with mechanical joint pipe connections

Workmen operate Tilden drill heads to speed operations on the Los Angeles Hyperion sewage-treatment plant.

Drill Heads Speed Boring 5,000 Hand-Rail Holes

Tilden Konkrete Kore drill heads, used in a specially built power gang drill, speed the boring of over 5,000 hand-rail holes on walkways topping the aeration tanks, settling tanks, and effluent channels of the new Los Angeles Hyperion sewage-treatment plant, recently completed.

The drill heads were made by the Tilden Tool Mfg. Co., San Clemente, Calif., and mounted in an ingenious gas engine-driven rig built by the National Steel and Shipbuilding Corp., contractors of San Diego.

A two-man operating team, drilling matched sets of holes, 2 inches in diameter, 6 inches deep and 12 inches center to center, averaged approximately 110 to 114 holes per day. A third man, following, spooned out and flushed away remaining dust. About four miles of aluminum hand rails were then set in the precisely drilled holes.

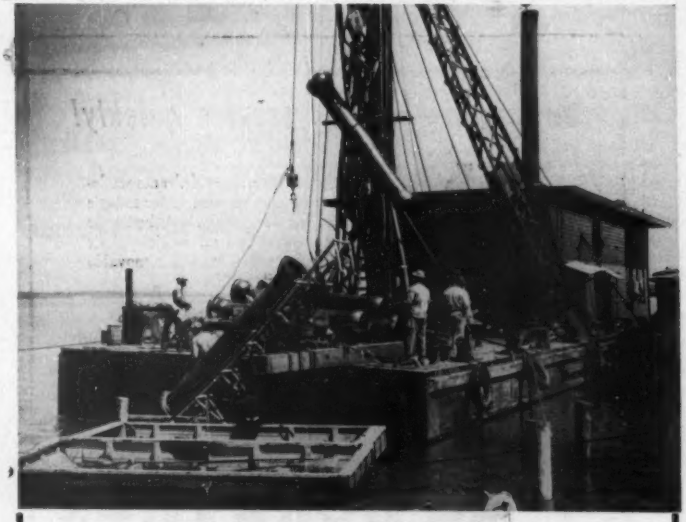
Portable Light For Traffic Control

Light Products, Inc., announces a revolutionary flashing beacon, the Neo-Flasher Model 5-100 for traffic control. The portable "Stop or Caution" warning light is self-contained and designed for problem corners where expensive wiring, trenching, and conduit makes the installation of wired flashing lights impractical.

This device can be easily installed on the existing "Stop or Caution" sign posts in 10 minutes' time. Only three, small 6-volt, dry cell batteries are needed to supply a brilliant, flashing light continuously for approximately 120 days and nights. Meeting standard traffic control specifications with the standard 8⅜-inch lens, Neo-Flasher is available with either a red lens for stop signs or a yellow lens for caution signs.

It weighs 13½ pounds complete and has a waterproof sturdy aluminum case. Zeuss fasteners lock the door quickly and securely, giving easy access to the interior. The Alzac reflector is highly polished and non-corrosive. The manufacturer reports that a gas vapor tube provides one of the greatest labor-saving features of the Neo-Flasher because it is designed to never burn out, thus eliminating the costly procedure of replacing burned-out incandescent bulbs. Complete information may be obtained from Light Products, Inc., Dept. A, 407, Commercial Center St., Beverly Hills, Calif.

This portable traffic light has a waterproof, sturdy aluminum case.



16" Water Pipe Line under John's Pass, Fla., being installed in 35 feet of water

MEMBER

BOYCE COMPANY

Submerged Pipe Lines All Over the World

Phone 3-2530 CLEARWATER, FLA.

The

SEWER SCOOTER*

* Trademark

Sewers Clean Themselves With a Sewer Scooter

100% self-propelled for 6" to 96" sewers—Is equally effective for all conditions and problems of sewer maintenance—completely cleans sewers of all sediments: rocks, gravel, sand and "hard-to-move" sludge.

Quick and efficient in operation. Investigate today! Ask for Bulletin.

Dealers—Some good territory open

Fitzgerald Engineering Co., Inc. P. O. Box 289-G, Coral Gables 34, Fla.

Secretary of Mack Trucks, Inc.

Election of E. J. Dinkel as secretary of Mack Trucks, Inc., 350 Fifth Ave., New York 1, N. Y., is announced by E. D. Bransome, president and chairman of the board.

E. J. Dinkel

A member of the bar in New York State and New Jersey, Mr. Dinkel joined the company in 1946 as industrial relations director at the New Brunswick, N. J., plant. He was named field personnel manager in 1949, moving to the home office at the Empire State Building, where he will continue to make his headquarters. In addition to his new duties, Mr. Dinkel will remain active in labor relations.

He attended Rutgers University and received his law degree from St. Lawrence University. Before joining the company, he practised law and taught at Rutgers.

Glass Rock Shield For Pipe Wrapping

Fiberglas pipe line rock shield, a new product for use during pipe wrapping operations in rough terrain, has been announced by the Owens-Corning Fiberglas Corp., Toledo 1, Ohio.

Rock shield is a prefabricated cushioning material of high impact strength, made of bitumen blended with inorganic filler and reinforced with Fiberglas Coromat inner wrap. It protects pipe in rocky areas, at river crossings, in swamps, at railroad or road crossings, and wherever pipe encounters rough handling.

Made in roll or sheet form, it is applied by a two-man crew with pressure-sensitive tape or metal strap.

The two other corrosion protection products manufactured by Owens-Corning are parallel reinforced Coromat for inner wrap, and pipe line outer wrap. The three provide reinforcement and corrosion-protection for pipe installed underground. They will not sag, shrink, or disintegrate, or crack or strip under the torsion and attrition of soil stress, or be damaged by temperature change.

Fiberglas pipe line rock shield is applied with pressure-sensitive tape or metal strap. It is designed to protect pipe in rocky areas and under all conditions where the pipe encounters rough terrain.

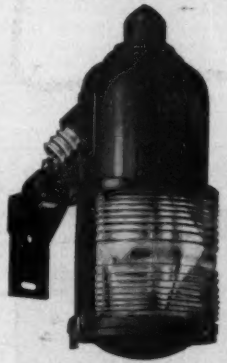
Get Full Value for YOUR LIGHTING DOLLAR

INSTALL Revere ELECTRIC MFG. CO. EQUIPMENT

In addition to full value for your lighting dollar you get DIGNITY IN DESIGN — SOUND CONSTRUCTION and HIGHEST QUALITY. Save substantially by concentrating on one source for all your requirements in Street—Airport—Sports—Play and Protective Lighting. Good Lighting starts with *Good* Equipment — your town deserves the best — BUY REVERE!

PROTECTIVE LIGHTING

Night Floodlighting forms a basic security pattern for municipal property—WATER WORKS, POWER PLANTS, BRIDGES, PUBLIC BUILDINGS VIADUCTS, Etc. The protective power of LIGHT should be used in all important municipal locations.



ELIPTOR FLOOD

750-1000 1500 WATT

VIADUCT LIGHT

Flush mounting—Lens throws beams directly on road or passageways.

WIDE ANGLE FLOODLIGHT

Provides a blinding light outside of fenced areas to enable guards to detect prowlers or snoopers without exposing themselves.

Full Line of LUMINAIRES *for Mercury or Incandescent Lamps*

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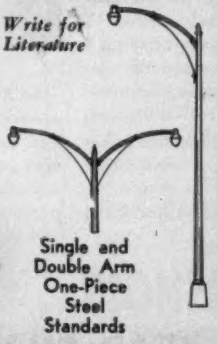


Single and Double Arm One-Piece Steel Standards

WHITE-WAY PYLON-LITES

For maximum horizontal light distribution — the fluorescent columns create a line of lights to adorn any thoroughfare. Operate economically and efficiently under all weather conditions for series or multiple circuits.

We furnish everything LUMINAIRES STANDARDS REGULATORS TRANSFORMERS and CONTROLS

REVERE ELECTRIC MFG. CO.

6015 BROADWAY — *Indoor and Outdoor Lighting Equipment for Every Need* — CHICAGO 40, ILL.

CITIES FROM COAST TO COAST

adopt identification necklaces of Bead Chain for students

From New York City to Redwood, California, many cities across the country are ordering Identification Necklaces as a safeguard for their school children. Each student is being issued a necklace carrying a tag on which is stamped the student's identity and other information necessary for civilian defense.

For this purpose, Bead Chain has long been accepted as standard by our Armed Forces, for whom we have made identification necklaces for many years.

So flexible that it can't kink . . . economical, attractive, comfortable and very strong . . . Bead Chain is also preferred for religious chains and many other products made for personal wear. Write for catalog and complete information.

The BEAD CHAIN® Mfg. Co.

24 Mountain Grove St., Bridgeport, Conn.

Insulated Closed-End Connector

This insulated closed-end connector can be completely installed by one stroke of a tool.

An insulated closed-end connector that can be used on both solid or stranded wires, and which requires but two sizes to cover the entire wire range from No. 22 to No. 10, is reported by Aircraft-Marine Products, Inc., 2100 Paxton St., Harrisburg, Pa.

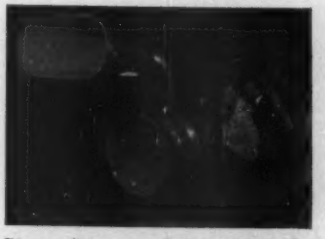
Called Bomb-Tail connectors because of their novel shape, the color-coded terminals are claimed to be superior to conventional round-end types in toughness, insulating properties, and cost. The insulated connections are completely installed by one stroke of a tool. Inner seam of pure copper terminal is brazed for extra strength. One tool crimps both sizes.

Gasoline Siren Produces 126-130 Decibels At 100 Feet

Efforts to meet the essential requirement of an air-attack signal—that it be heard by all who should hear it—have brought the siren a long way from its progenitor, the automobile horn. The big one shown here looks like the ultimate in impressiveness, yet it has push-button starting and hand control.

Rising from a base three feet in diameter and weighing 900 pounds, this Mobil-Directo siren is powered by a 19-hp 4-cylinder gasoline engine which makes it independent of electrical power supply. It has two other positive features. The directional horn is rotated automatically two to four times a minute. Its sound rating is 126–130 decibels at 100 feet. This is a very high rating and the rotation gives coverage of a large horizontal area with the tendency to eliminate dead spots.

The manufacturer is Biersach & Niedermeyer Co., 1939 N. Hubbard St., Milwaukee 12, Wis.



Big gasoline-powered siren with its designer, Sidney J. Lattow, and its manufacturer, Norton Biersach, secretary of Biersach & Niedermeyer Co., Milwaukee 12, Wis.

Protective Coatings For Metal Equipment

One of industry's greatest problems has always been the practical and economical protection of its physical assets as well as the prevention of contamination of its products. Coatings based on coal tar, vinyl, chlorinated rubber, and alkyd and phenolic resins, when properly formulated and engineered, have proved their value in the solution of this problem. These industrial protective coatings, when applied under the supervision of a competent corrosion engineer, add appreciably to the useful life of metal equipment and structures.

The Pittsburgh Coke & Chemical Co., Grant Building, Pittsburgh 19, Pa., manufactures Pitt Chem protective coatings which include hot and cold applied tar base coatings and alkyd, vinyl, chlorinated rubber, and phenolic base coatings.

Hot applied tar base coatings are designed primarily for the oil, gas, and water industries to protect their underground pipelines. Cold applied tar base coatings provide maximum protection at low cost and alkyd base paints create a high quality exterior maintenance coating with excellent appearance and weather characteristics.

Chlorinated rubber and vinyl coatings are resistant to acids and alkalies. They are for use under severe fume and spillage conditions, and a wide range of exposures involving constant or intermittent immersion in corrosion on contaminable liquids. Phenolic coatings resist solvents, boiling water, steam, and most organic and mineral acids.

These coatings as well as the company's hot applied tar base coatings are described in a booklet, *Control Corrosion through Pitt Chem Protective Coatings.*

Atlas General Products Lists Personnel Changes

George L. Wirtz, president of the Atlas Mineral Products Co., of Mertztown, Pa., and Houston 1, Texas, has announced the following promotions and appointments.

Edison C. Sickman, former sales coordinator, has been named general sales manager. He will be assisted in sales department activities by Donald F. Deakin and Gerald F. Gilbert, Jr.

Earl A. Erich will handle technical service activities. Augustus Boova, formerly with The Ciba Products Co., joins the company as a sales trainee.

George Gabriel, engineering coordinator, assumes the additional duties of plant manager, and George Kanelis is promoted to assistant plant manager along with Raymond Trollinger, who became plant superintendent.

LINDSAY MODEL T-33 AIR COMPRESSOR

Water Departments, Municipalities and Contractors choose this powerful low cost compressor for opening service trenches and other jobs for which light paving breakers and rock drills are used. Write for detailed information. Dealerships are available in some areas.

P. K. LINDSAY COMPANY

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Solves your leaf or clean-up problem

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Here's what three West Coast users, each with two to four years' experience with Battery AD-X2, say . . .**

BUS LINE—"Battery AD-X2 Re-processed Batteries are about 15% lower in original cost, and have at least twice the life expectancy. We also treat all new batteries with Battery AD-X2 to prevent sulfation."

POLICE CAR FLEET—"Life expectancy extended from 12 to 18 months beyond normal even though batteries were not new at time of treatment."

Why delay? Get Battery AD-X2 TODAY. Treatment for Group 1 and 2 battery, $3.00. Or use our Re-processed Batteries. Money-back guarantee. Write or phone NOW for price list, fleet discounts and address of nearest distributor.

**Names and addresses on request.

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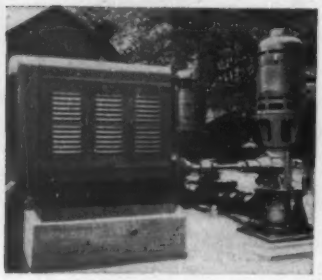
24 Hour POWER Service



JOHNSON Combination DRIVES

CONTINUOUS WATER SUPPLY . . . protects the public health and reduces fire hazard.

FLOOD DAMAGE . . . insures 24 hour operation of drainage pumps in any emergency.

RESERVE POWER . . . will transmit additional power to meet emergency requirements.

SEWAGE . . . the ideal Drive for continuous 24-hour constant service.

ADAPTABLE . . . available in a number of sizes, types and ratios to meet varied application.

WORLD WIDE ACCEPTANCE . . . in recognition of dependable service, economy of operation and maintenance. Hundreds in use by municipalities.

INVESTIGATE NOW . . . get the facts on the Johnson Right Angle Gear Drive. Send for illustrated catalog.

PHOTO: Installation at Red Bank, New Jersey. Courtesy Layne-New York Company.

JOHNSON GEAR AND MANUFACTURING CO.
"45 years of Engineering Service"
8th & Parker Streets • Berkeley 10, Calif.

Kardex cabinets (at the right) house the Police Bureau of Identification's records in Minneapolis, Minn.

At left is a view of Linedex visible reference rotary units in use at the Peninsular Telephone Co. of Tampa, Fla.

Municipal Record Equipment

For many years Kardex cabinet equipment has been the standard method of making, housing, using and protecting visible records. These cabinets are available in small sizes for housing 500 records up to the multi-cabinets of over 20,000-card capacity for utilities and election boards. A new 24-page Kardex Cabinet Equipment booklet gives complete information including specifications.

Kardex utility cabinets are of lower cost through use of small metal clips to install cards in slides and the greater card capacity attained in the same space by less margin exposure. There is no sacrifice in records efficiency, as is explained in a new 8-page booklet describing Kardex Utility Cabinets.

The first purpose of a visible reference index is to produce accurate information. Its second, and almost equally important purpose is to do it fast. Where indexed names are to be consulted, Linedex reference equipment is indicated. Like other modern methods of indexing, it is based on the sectional principle. You may begin an installation in a modest way and add to your equipment as needs become apparent.

Linedex equipment is offered in several forms illustrated in a new 16-page booklet.

These booklets are available from Remington Rand, Inc., 315 Fourth Ave., New York 10, N. Y.

HELLIGE TURBIDIMETER

A TURBIDIMETER WITHOUT STANDARDS

Accurate • Foolproof • Universal

4 in 1
MEASUREMENT OF TURBIDITY (SiO_2)
DETERMINATION OF SULFATE (SO_4)
AND OTHER APPLICATIONS

WRITE FOR CATALOG No. 8000-A

HELLIGE
INCORPORATED
3718 NORTHERN BLVD. LONG ISLAND CITY 1, N.Y.

No Clutches, Drums, or Brakes Are Needed on This Machine

No clutches, drums, or brakes are needed on the Hopto TM, digger, crane, and shovel which is a low-priced, truck mounted, power take-off operation. Manufactured by the Badger Machine Co., Winona, Minn., the machine weighing 2,200 pounds, has two hydraulic cylinders that power the digging bucket. These cylinders are connected directly and make it possible to excavate in hard soils with efficiency. Hydraulic valves by-pass preventing overloading or damage from carelessness, unknown obstacles, and underground objects.

The Hopto TM uses a simple design that permits flexible installation anywhere. It can be converted from shovel, to crane, to hoe in a matter of minutes.

New Heavy-Duty Boom For Lifting and Loading

A new heavy-duty boom, designed especially for lifting and loading with its 5-ton truck-mounted Bantam shovel-crane, has been announced by the Schield Bantam Co., of Waverly, Ia.

Available in 25-foot length with 5-foot and 10-foot extensions, this machine has approximately four times more rigidity than standard booms due to use of heavier reinforcing and bracing to resist shock and sling-load conditions.

The new boom is especially adaptable for pipe handling, steel erection and other heavy work. It increases the work range of the truck-mounted Bantam which is also available with shovel, trench hoe, back filler dragline, pile driver, magnet, and clamshell attachments.

Crouse-Hinds' Officers

The Crouse-Hinds Co., Syracuse 1, N. Y., held election of officers at its board of directors' meeting. William L. Hinds is chairman of the board, a position he has held since 1947; Albert Freeman Hills is now president; William Cornell Blanding, executive vice-president; John R. Tuttle, vice-president and treasurer; Charles M. Crofoot, honorary commercial vice-president and F. Ware Clary, vice-president, in charge of public relations and publicity.

Other officers include: Carl H. Bissell, vice-president, in charge of engineering; John G. Hummel, vice-president and general manager; Hamilton Armstrong, vice-president, in charge of plant operations; Robert J. Sloan, secretary; Walter F. Beach, controller, and Robert J. Jones, assistant to the vice-president and office manager.

Erle R. Monesmith is vice-president and general sales manager; Russell P. Northrup, commercial vice-president and assistant sales manager, and Albert H. Clarke, Frank J. Fancher, and Kenneth W. Mackall, commercial vice-presidents.

Just off the press

how RCA 2-WAY RADIO

BOOSTS SAFETY CONSERVES RESOURCES STRETCHES BUDGETS

... an illustrated fact-book about 2-way radio in public-safety services. Tells "how-it-works" and "how-to-use-it" in easy, straightforward terms.

... shows how RCA 2-way radio speeds law enforcement, fire-fighting operations. Describes municipal and state communication networks. Illustrates use in forestry conservation, flood control, game-law enforcement.

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RCA RADIO CORPORATION of AMERICA

CUTS ICE and SNOW REMOVAL COSTS

You can provide MORE PROTECTION at LESS COST if you use a stainless steel "Scotchman" spreader and straight de-icing salts (no sand; no cinders).

The thrifty "Scotchman" method is far CHEAPER than sand or cinders. It is eight times FASTER. It keeps drainage open and provides BARE-SAFE pavements.

You SAVE when you SALT with a "Scotchman"

COMPLETE CONTROL: *direction, width, and rate of spread.*

WEATHER-PROOFED ENGINE • ELECTRIC STARTER

BAGGED or BULK SALT • USE on ANY TRUCK or PICKUP

Literature? Demonstration?

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Special castings to meet your individual requirements may make use of our large stocks of non-standard patterns.

BELL & SPIGOT—FLANGE —SHORT BODY—PLAIN ENDS — MECHANICAL JOINT — SPECIALS

Sizes—2" to 84"

WARREN FOUNDRY & PIPE CORP.

55 Liberty St. New York, N. Y.
75 Federal Street Boston, Mass.

Lawn Mower's Attachment Pulverizes Leaves

Two rotary lawn mowers are being offered by the Bolens Products Division of the Food Machinery and Chemical Corp., Port Washington, Wis. Model 420C is a 20-inch gasoline rotary mower equipped with a 2-hp four-cycle engine. A Grind-a-leaf attachment will be made available in the fall for this model. The accessory pulverizes leaves, turning them into fine particles and depositing them evenly over ground.

Among the features of the 420C are its side trimmer unit which permits cutting to within ½ inch of the outside measurements on the sides and 1 inch in front. According to the manufacturer, it features exceptional balance and maneuverability, simple cutting height adjustments from 1½ to 3 inches, and a fully guarded cutting blade.

Model 416, a 16-inch electric rotary mower with a 1/3-hp motor, is light in weight, smooth and silent running and has stop and overload safety switches conveniently located at the handlebars.

Speeds Office Work

The first public showing of the Sensimatic accounting machine, with multiple registers which provide greatly increased capacity, highlighted the Burroughs Adding Machine Co. display at the 1951 Annual Office Machinery & Equipment Exposition in the 71st Infantry Regiment Armory, New York City, May 21-23. Operated through sensing pins from a "mechanical brain," the Sensimatic furnishes a fast and economical method of posting accounts.

The Burroughs payroll machine writes an employee's check and ledger in a single operation, and at the same time, it prepares a payroll summary with automatic totalling of earnings and deductions. The check is automatically ejected from the machine when the operation is completed. The Burroughs computing billing machine ads, subtracts, multiplies—and provides typewritten description.

Road Maintainer

New road maintainer is tractor powered.

Dearborn Motors, 2500 E. Maple Road, Birmingham, Mich., has introduced a new road maintainer powered by a standard Ford tractor and designed for low-cost grading and leveling uses.

The 8-foot blade, equipped with a replaceable cutting edge and end bits, is operated by a separate hydraulic mechanism powered directly by the Ford engine crankshaft, thus freeing the Ford tractor hydraulic mechanism to operate accessory equipment. It can be operated in three pitch positions and in nine angle positions.

The manufacturer reports that the entire maintainer attachment can be removed from the tractor in approximately three hours. A Dearborn side-mounted mower can then be installed on the tractor for roadside mowing.

Research Metallurgist Of Cooper-Bessemer

The promotion of Thomas E. Eagan to a new position of research metallurgist has been announced by Ralph L. Boyer, vice-president and chief engineer of The Cooper-Bessemer Corp., Mount Vernon, Ohio. Mr. Eagan will further the company's experience in the field of nodular iron and other engineering metals for its own production needs.

Mr. Boyer explains that "the new post of research metallurgist is another important step in Cooper-Bessemer's continuing program of intensive development work in the design and manufacture of engines and compressors."

Cooper-Bessemer's pioneering work in the practical application of nodular iron to foundry procedures under Mr. Eagan's supervision has received widespread attention of metallurgists throughout the world. The company is the first large engine and compressor builder licensed to produce nodular iron, and has already perfected several important developments in the use of this newest material for engine and compressor components subject to high tensile stresses and where cast steels or forgings were formerly essential.

A national director of the American Foundrymen's Society, Mr. Eagan is also a member of the American Society for Metals, the British Iron and Steel Institute, and the American Society of Corrosion Engineers.

On Gar Wood Sales Staff

The Wayne Division of Gar Wood Industries, Inc., with headquarters at Wayne, Mich., announces the addition of K. J. Shedd to the administrative sales staff of the Wayne Division.

He will assume charge of the Load-Packer Section of the division and will be responsible for the promotion and sale of the Gar Wood Load-Packer.

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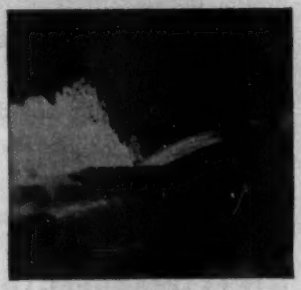
Caisson Well means: LIFELONG INSTALLATION and LOW WATER COST

Would you believe that water can now be produced at a cost of less than 2 cents per 1,000 gallons, including pumping, operation, maintenance and amortization?

LET US PROVE IT TO YOU



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FULTON *Shuredry* ON THE JOB

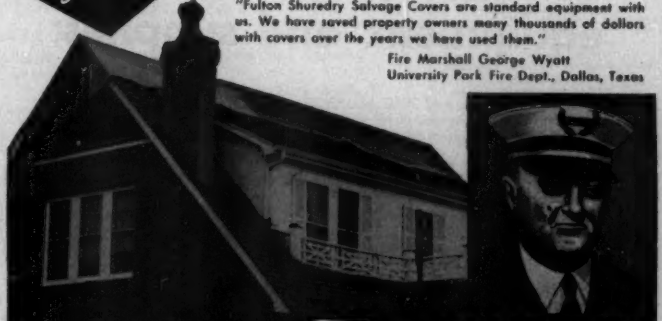
IN DALLAS TEXAS

Shuredry

When lightning struck the fine Dallas residence shown below, destroying part of the roof, Fulton Shuredry Green-Bak Salvage Covers were used to cover and protect the exposed portion from additional damage by rain or storm. This is just one of the many, many uses for Shuredry Salvage Covers, which have saved fire victims untold thousands of dollars in damage. Approved by National Board of Fire Underwriters and by Factory Mutual Laboratories, Fulton Shuredry tops every test for water penetration and water seepage. Specify Shuredry on your next order from your fire equipment dealer.

"Fulton Shuredry Salvage Covers are standard equipment with us. We have saved property owners many thousands of dollars with covers over the years we have used them."

Fire Marshall George Wyatt
University Park Fire Dept., Dallas, Texas



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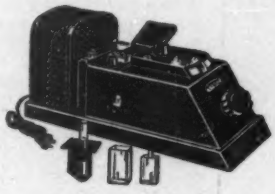
Adaptable for Use in Water Analysis



Can be used for any determination in which color or turbidity can be developed in proportion to substance to be determined.

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Park-O-Meter, Dual and Marktime—some late Models. Low Price for quick sale. Write:

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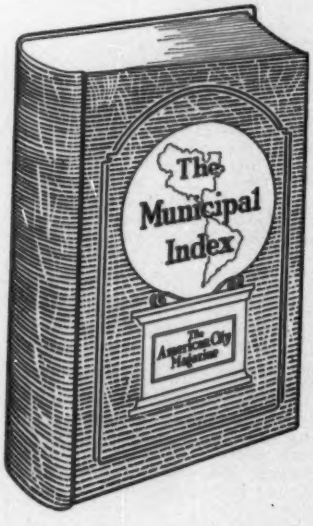
Contact Harold deWyk, Purchasing Agent, 13030 Hemlock Avenue, Dearborn, Michigan.

To Officials

who purchase or influence the purchase of municipal equipment and supplies:



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In the muncipal offices of almost every large city, and in thousands of smaller towns and villages, from one to five or more copies of this yearbook are to be found on officials' desks or library shelves.

If you are a subscriber for the monthly issues of *The American City*, you may have the 1951 MUNICIPAL INDEX AND ATLAS on your own desk. If not, may we suggest that you locate the book on some other official's desk and borrow it from time to time?

If your search discloses no copy of the 1951 edition in your City Hall, please write us a letter and if copies are still available we will send you a complimentary copy.

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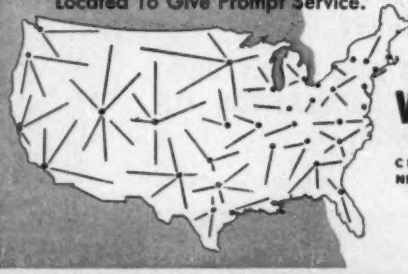

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